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Reading Matter Contents. page 1408
Classified List of Advertisers. 103
Alphabetical Index to Advertisers. 107
Advertising and Subscription Rates. 1415

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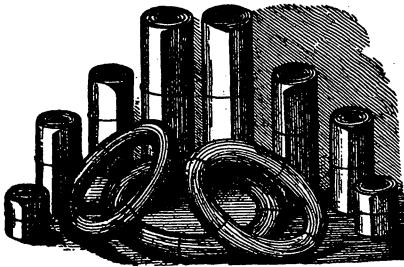
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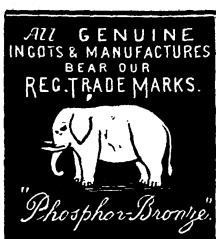
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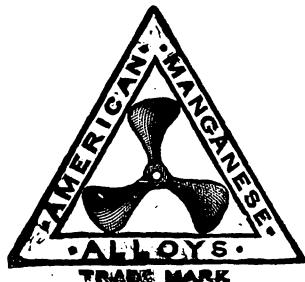
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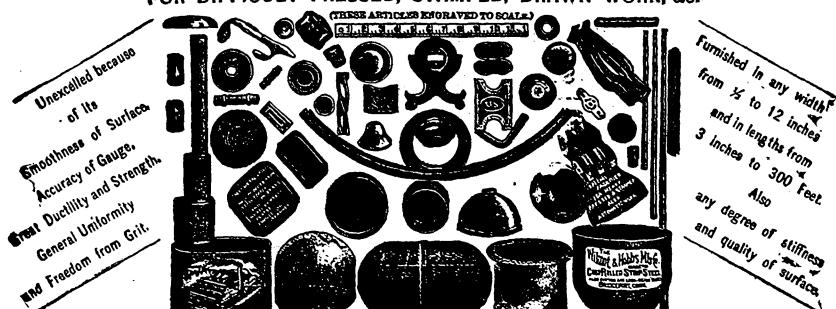
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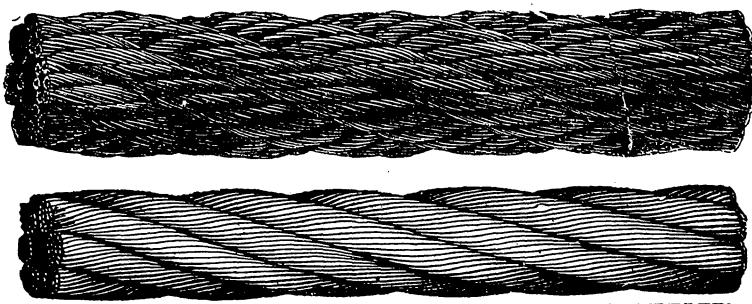
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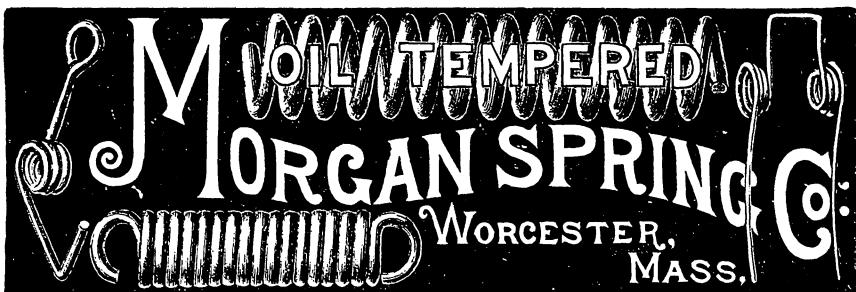
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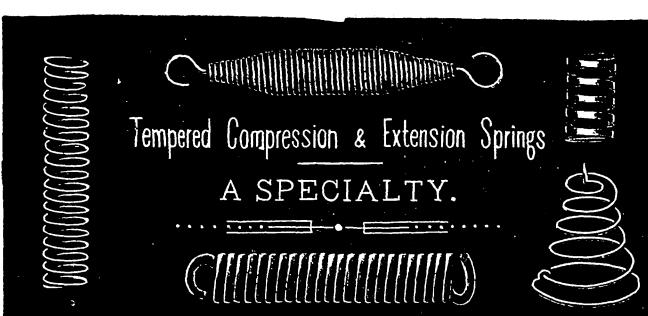


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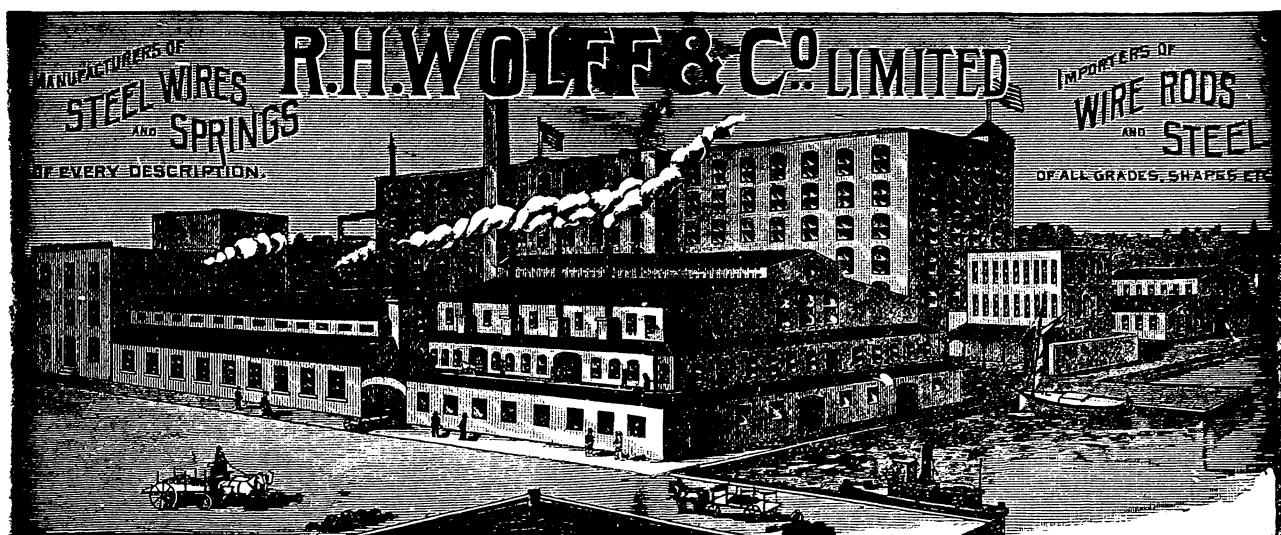
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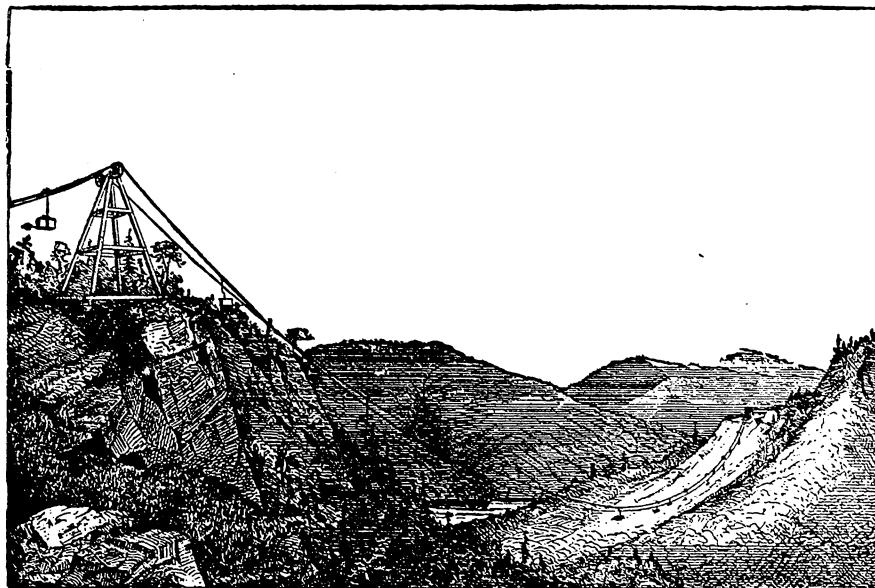
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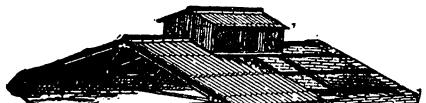
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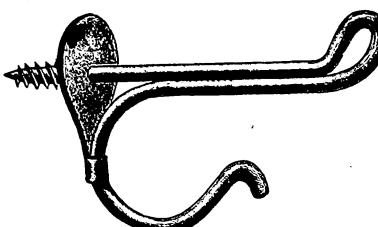
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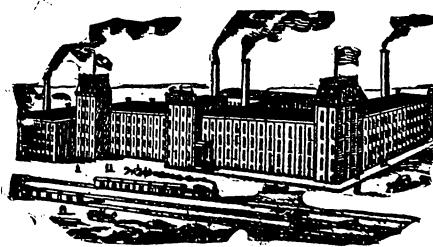


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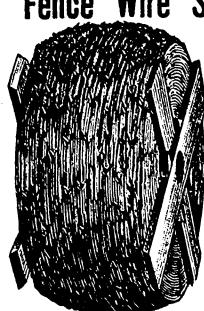
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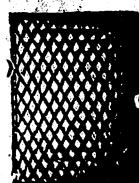


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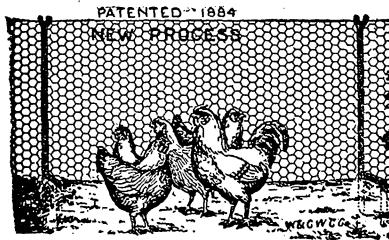
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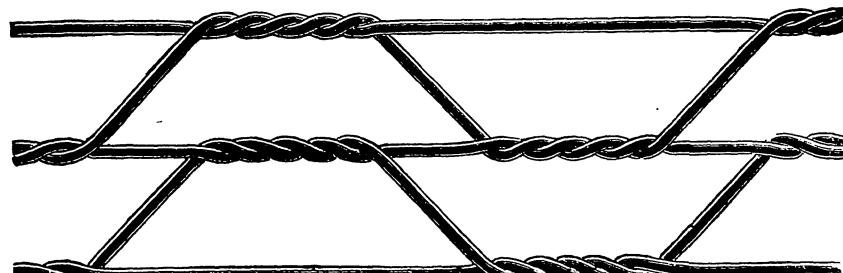


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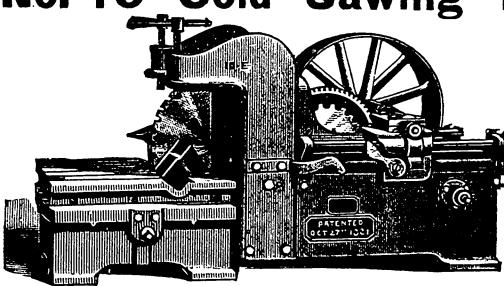
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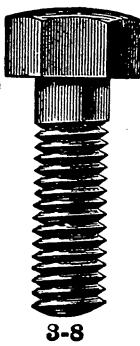
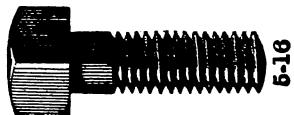
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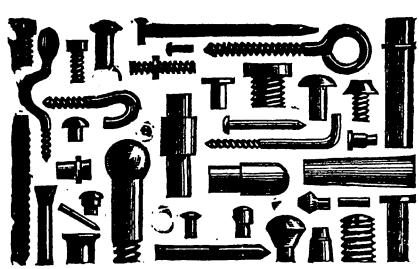
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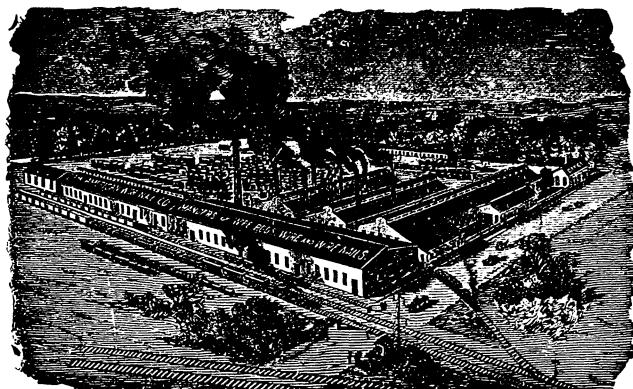
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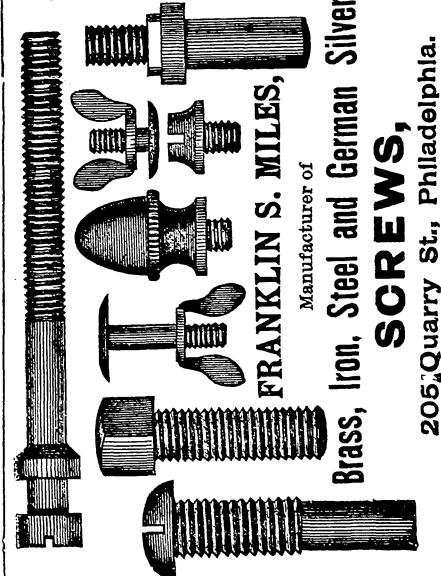
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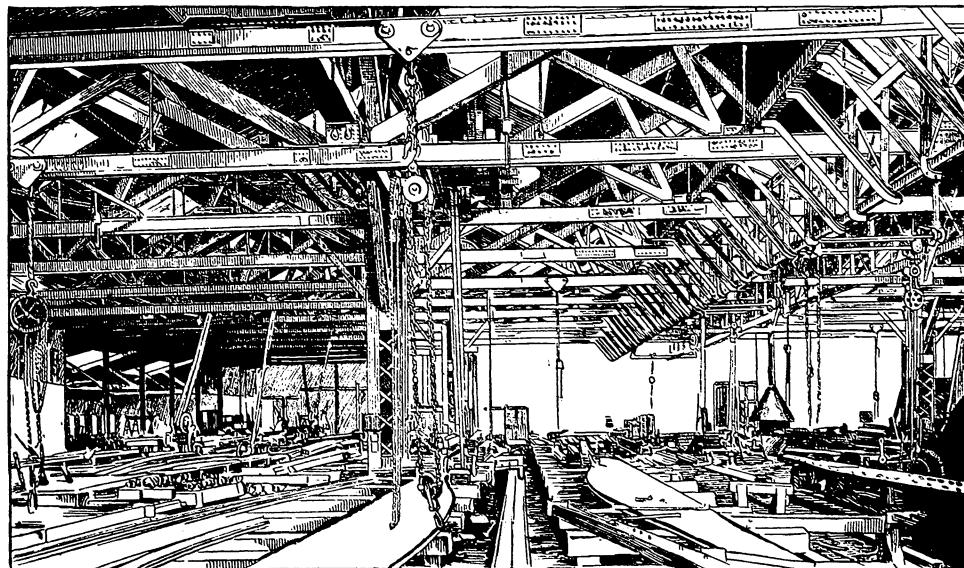
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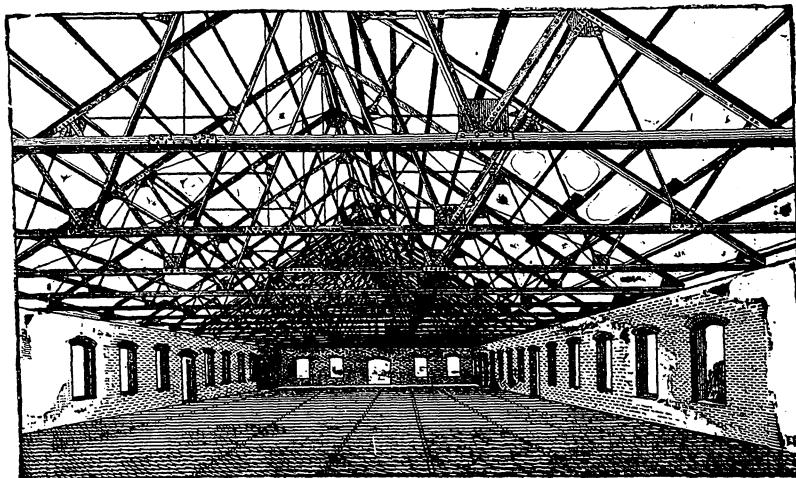
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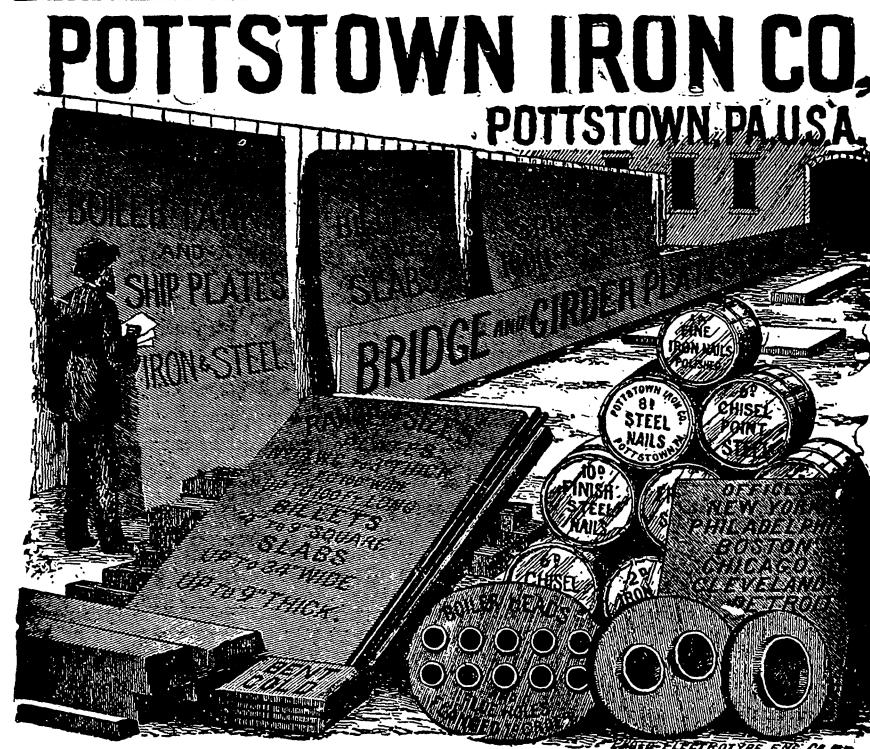
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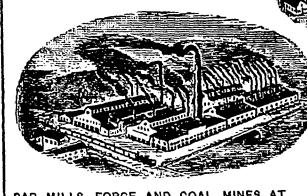
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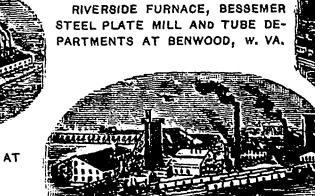
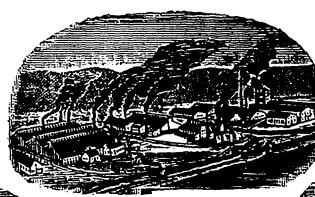
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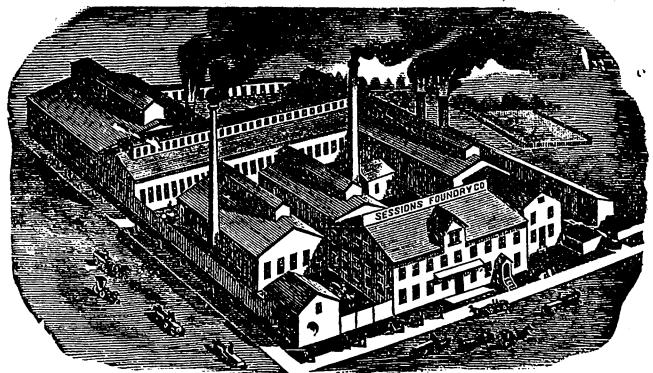
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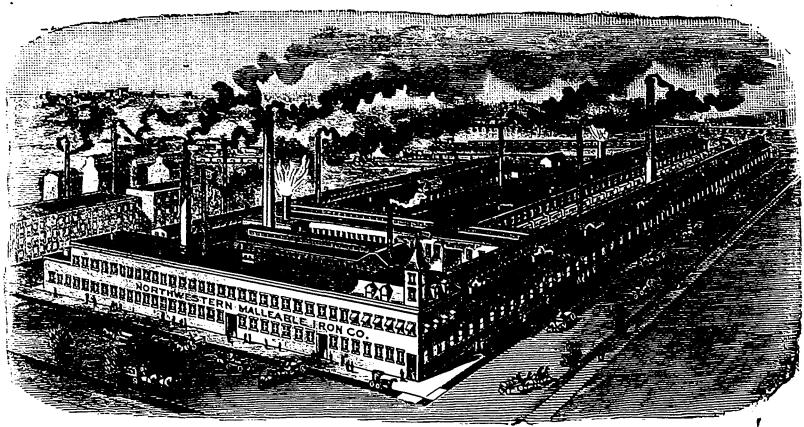
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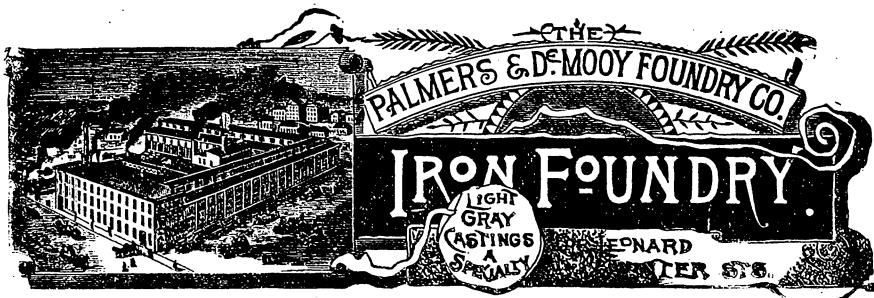
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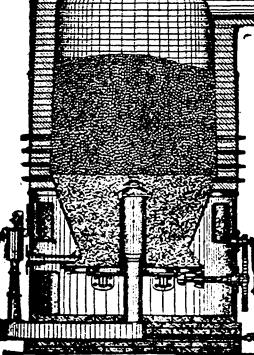
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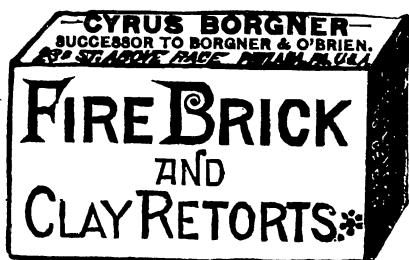
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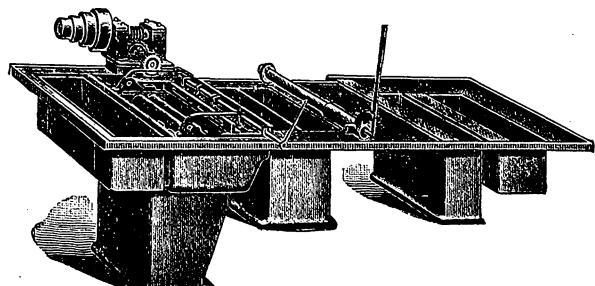
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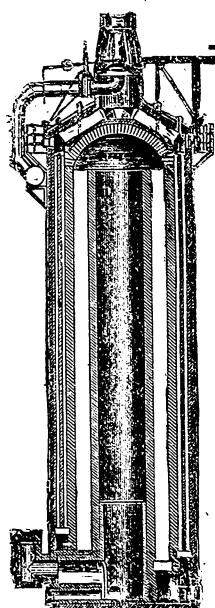
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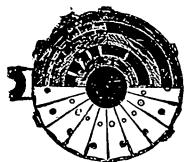
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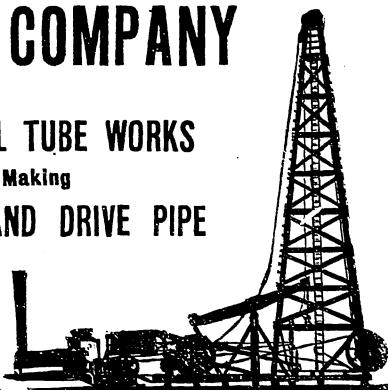
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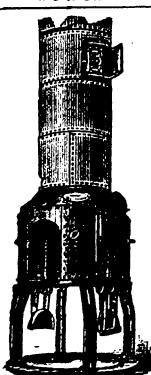
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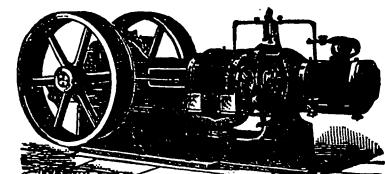
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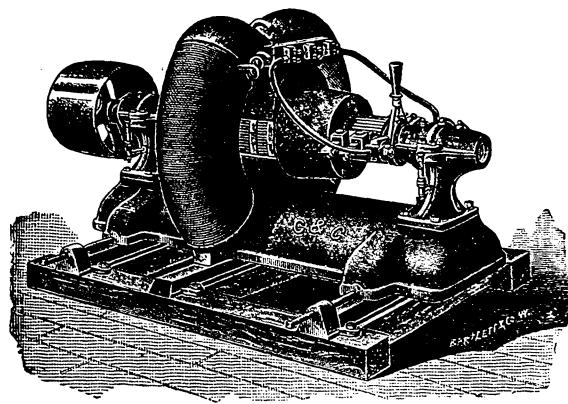
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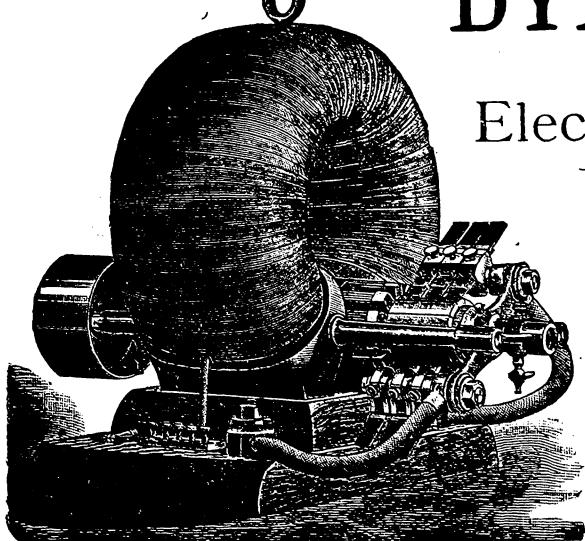
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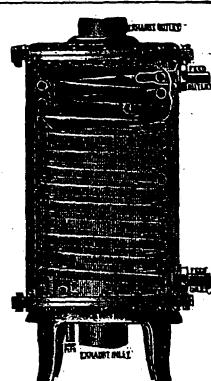
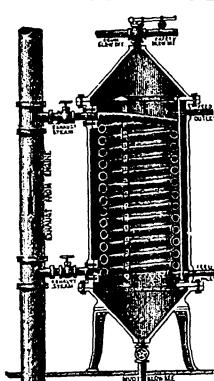
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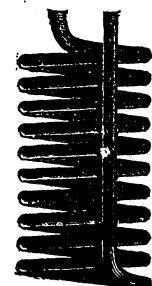
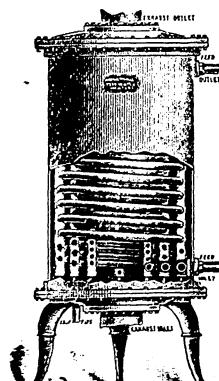
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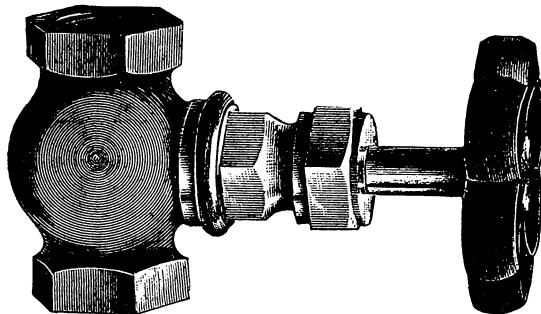


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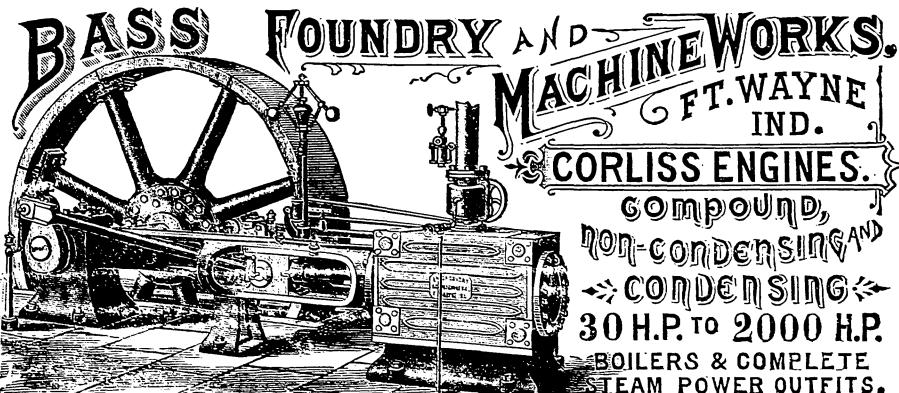
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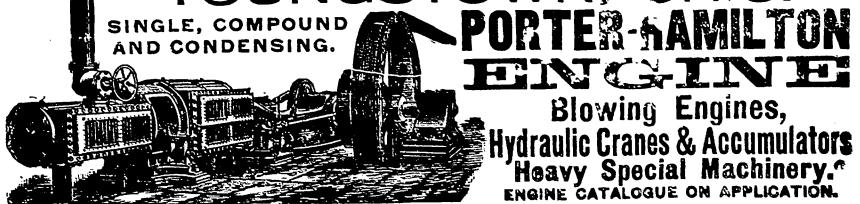
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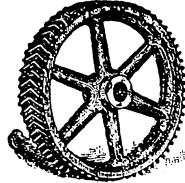
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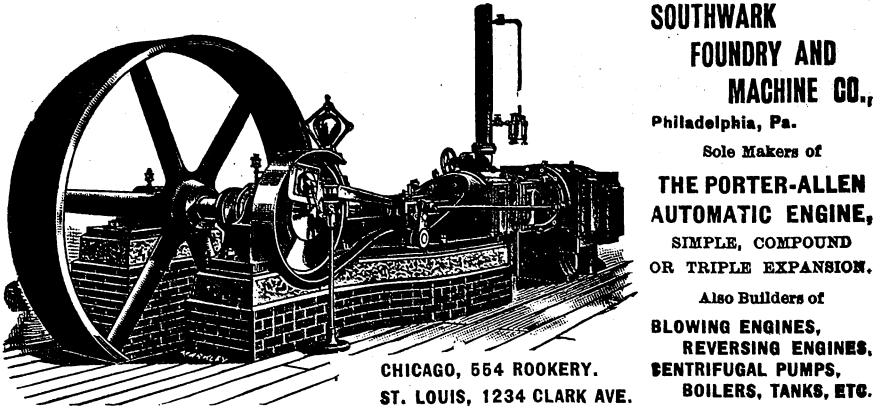
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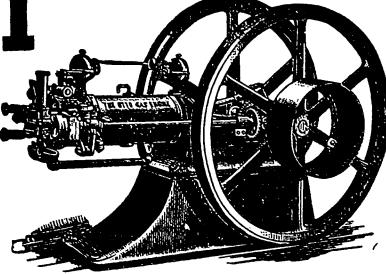
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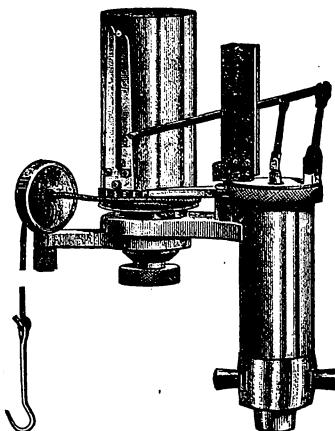
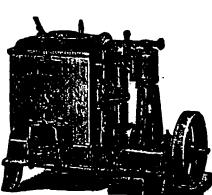


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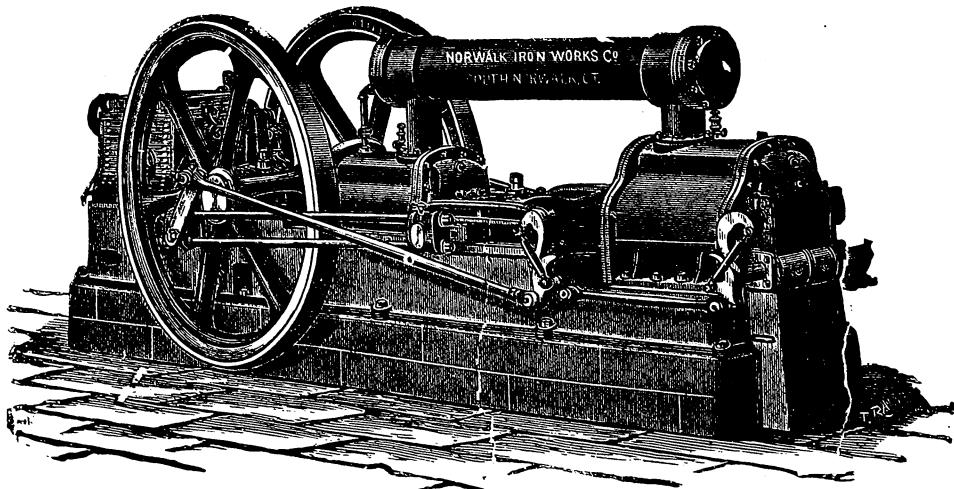
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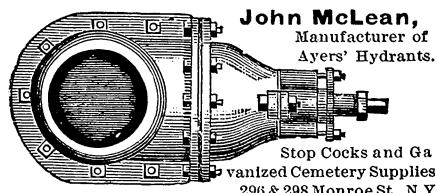
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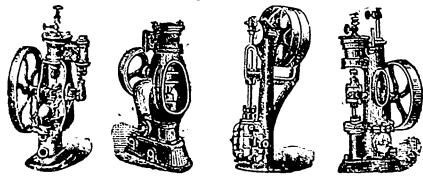
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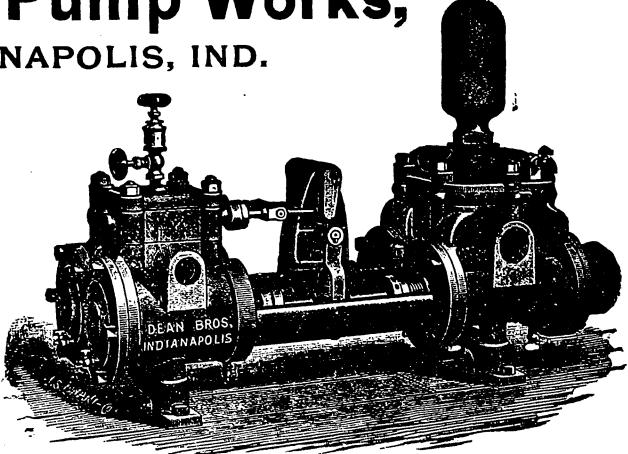
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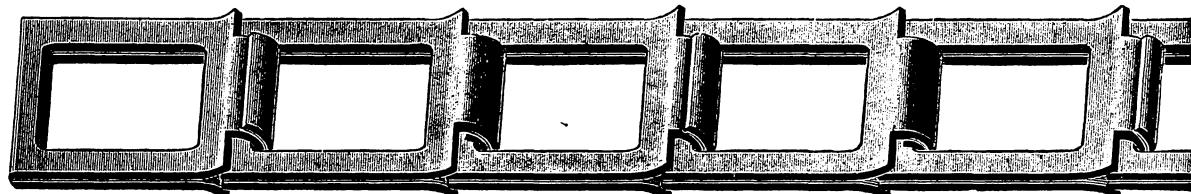
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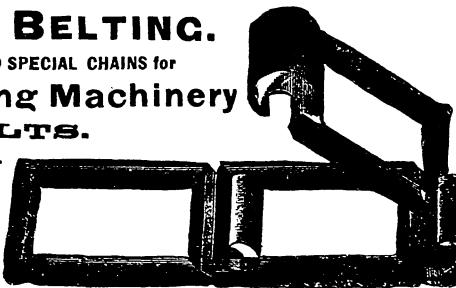
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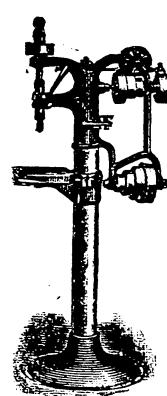
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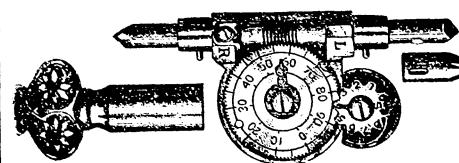
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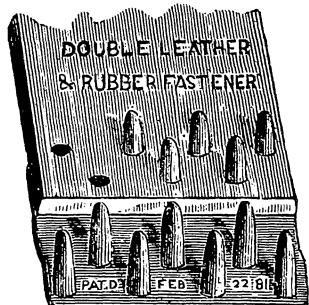


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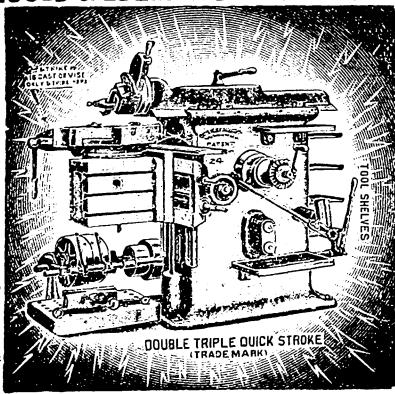
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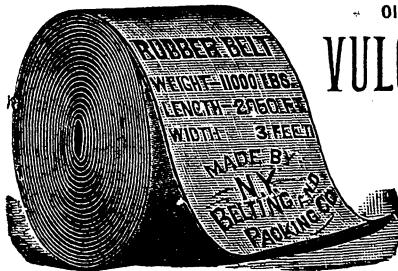
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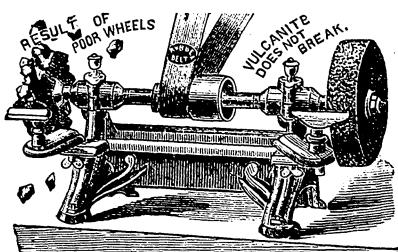
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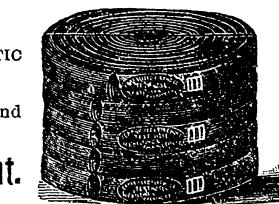
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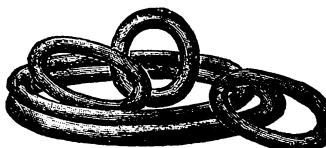
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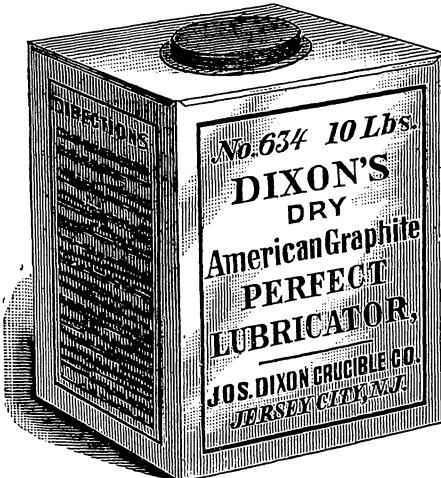


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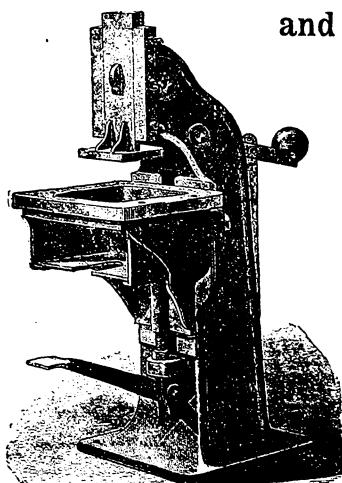
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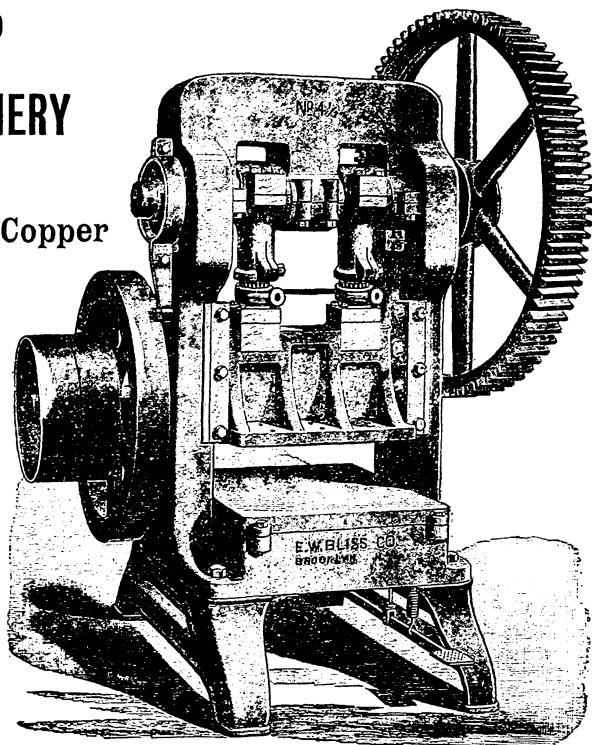
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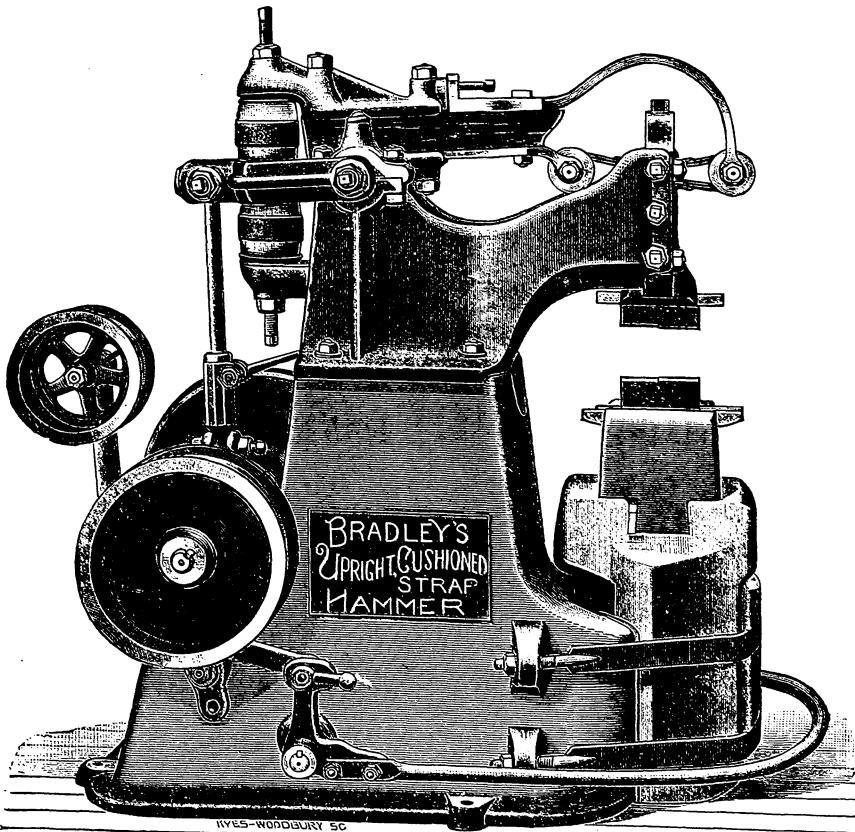
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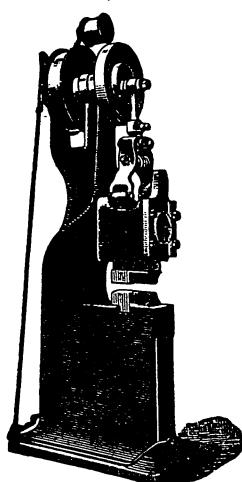
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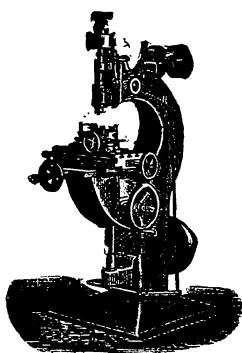
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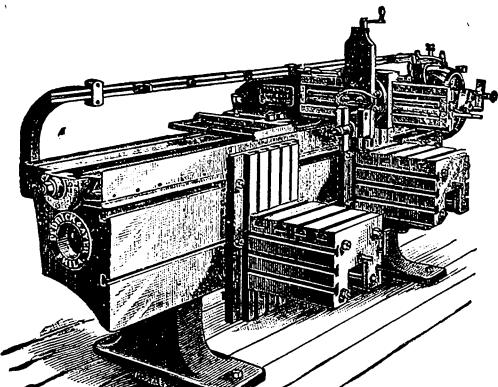
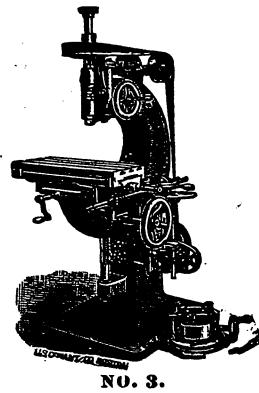


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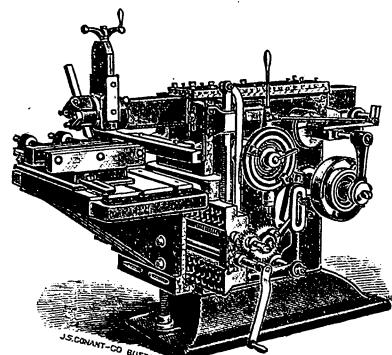
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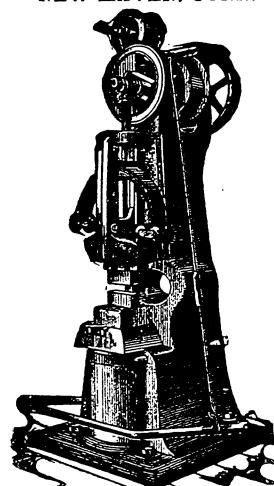
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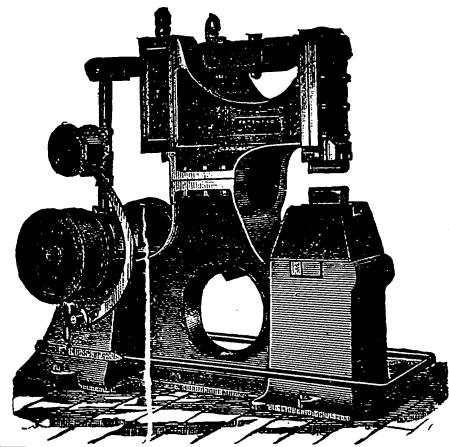
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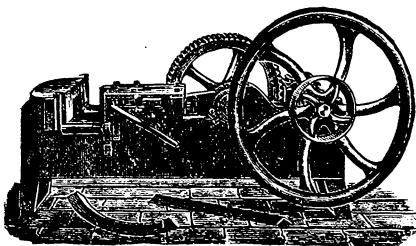
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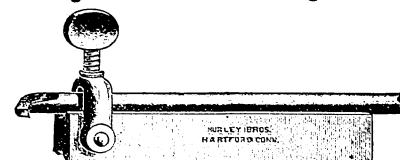
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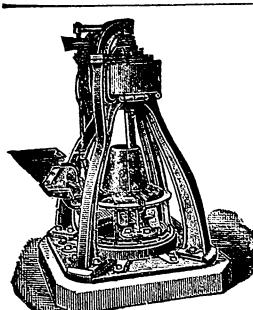
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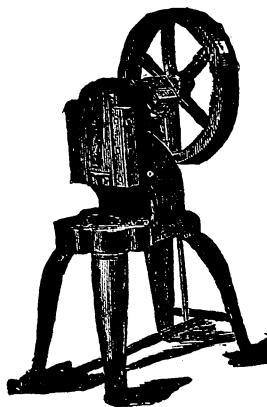
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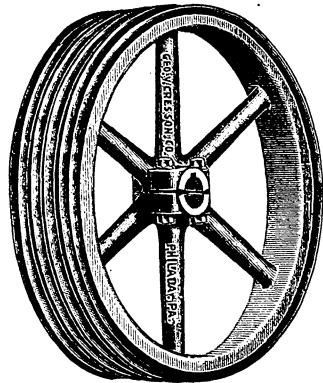
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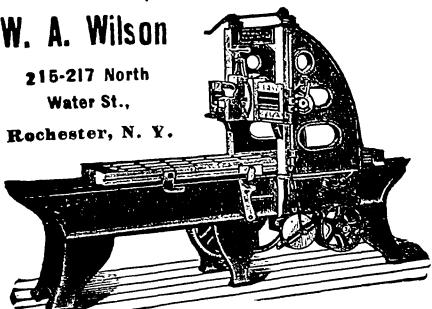


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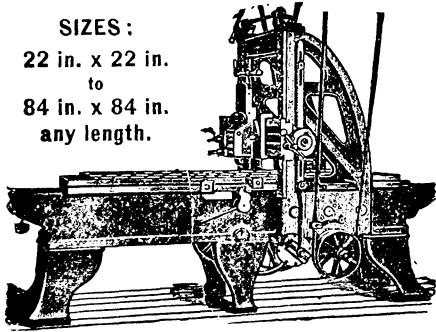
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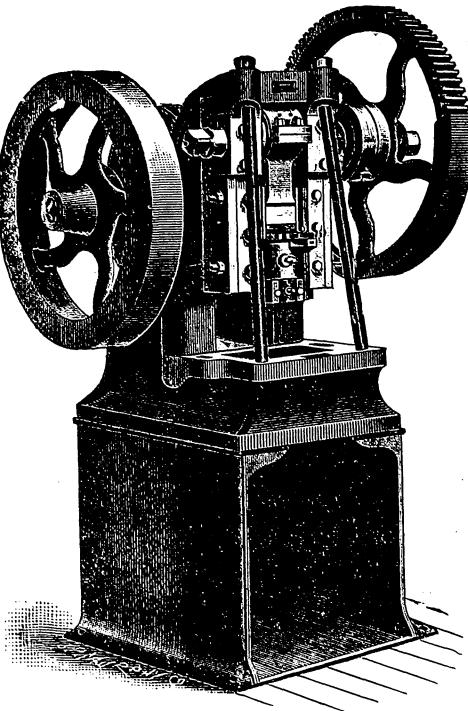
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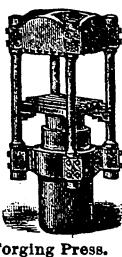
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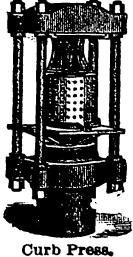
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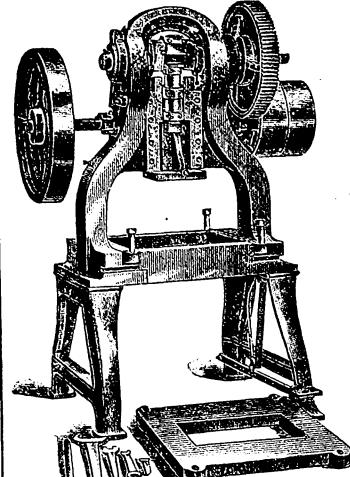
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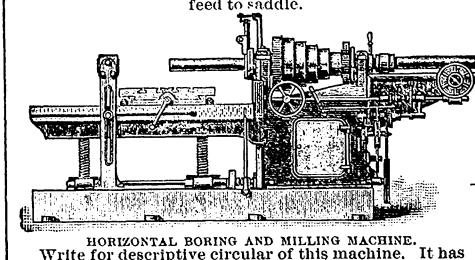
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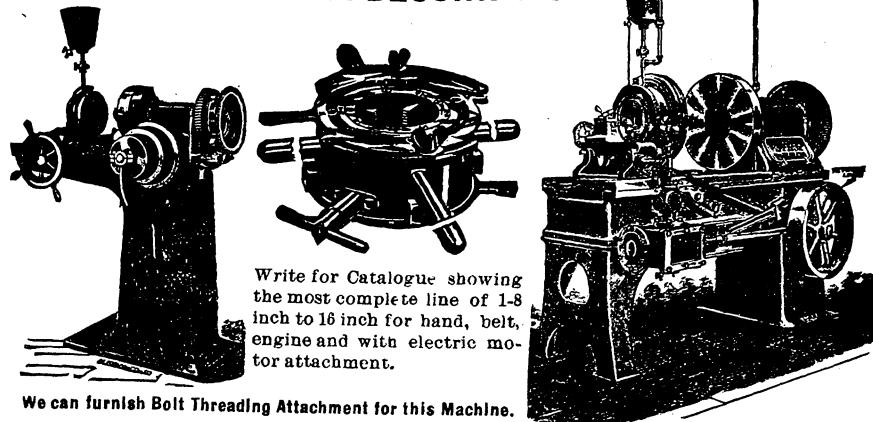
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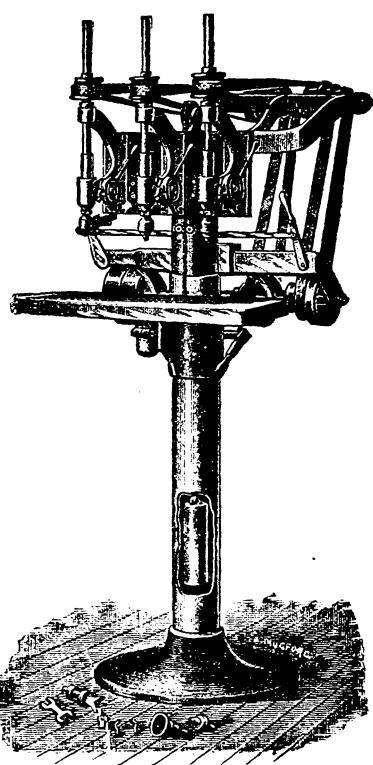


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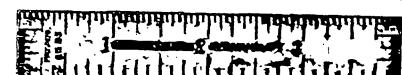
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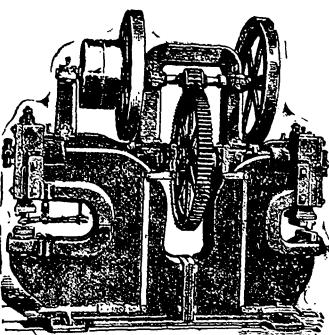
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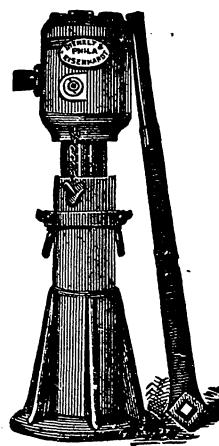


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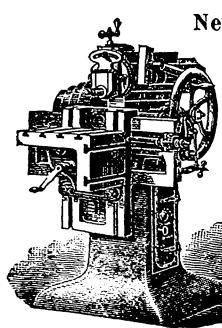
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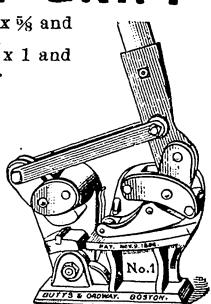
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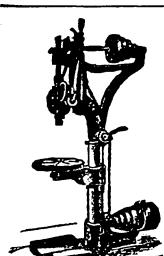


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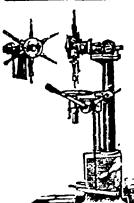
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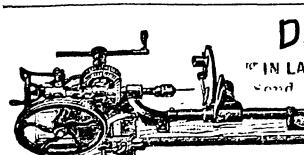
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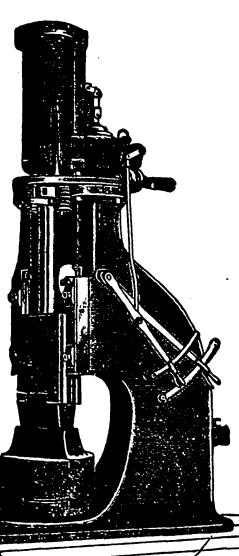


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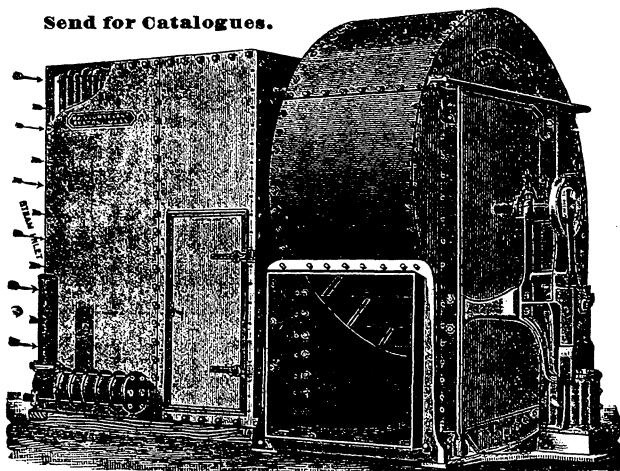
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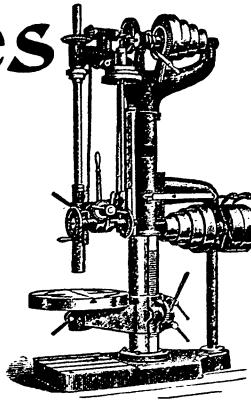
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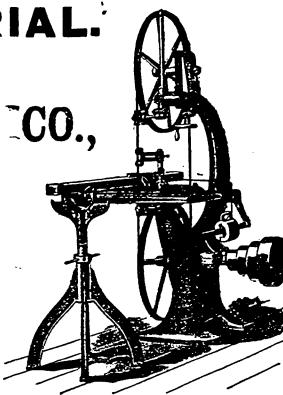
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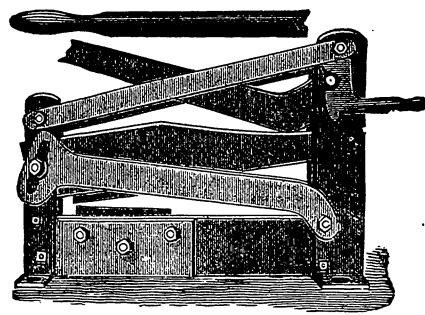
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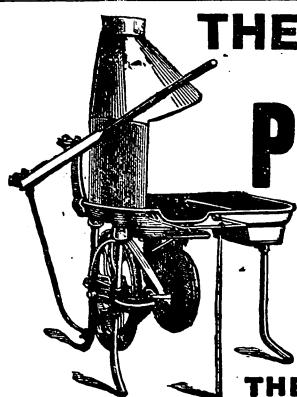


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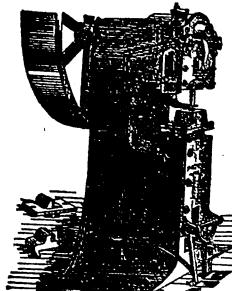
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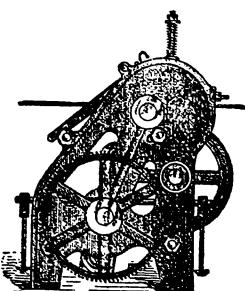
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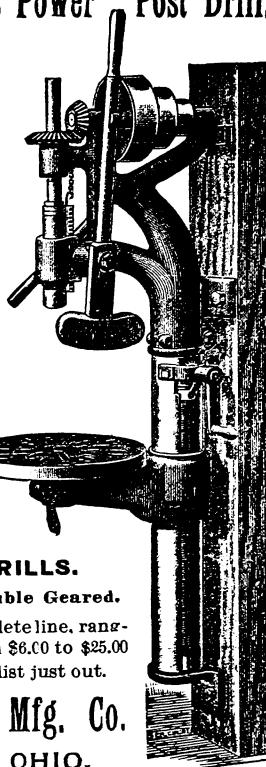
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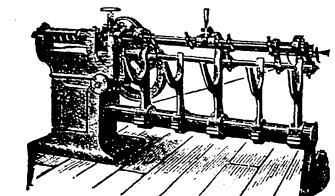
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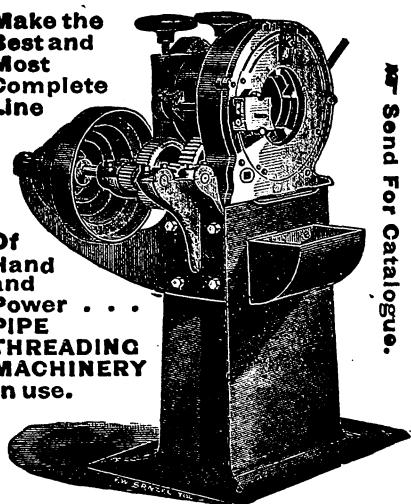
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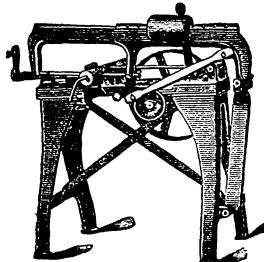
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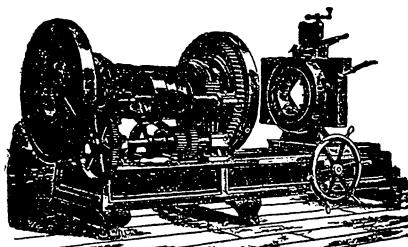
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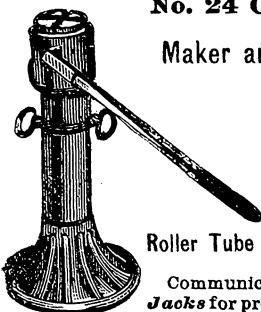
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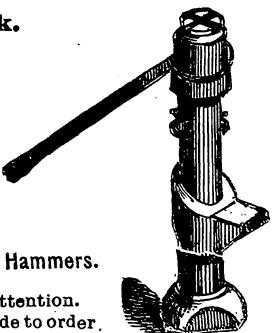
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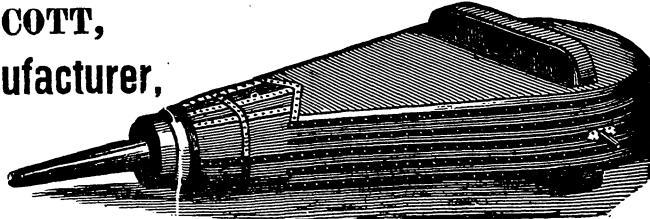
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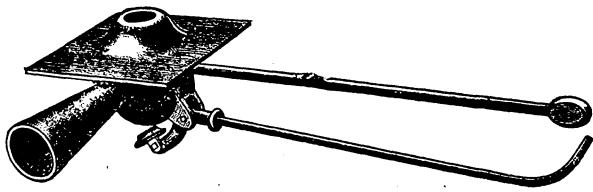
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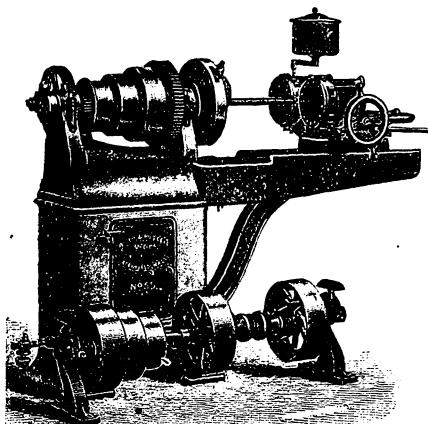
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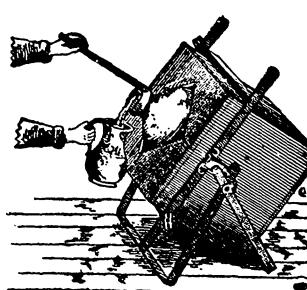
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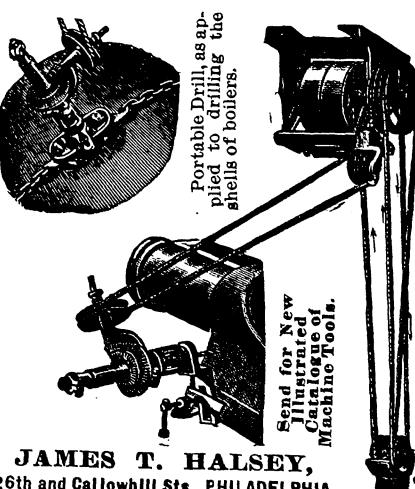
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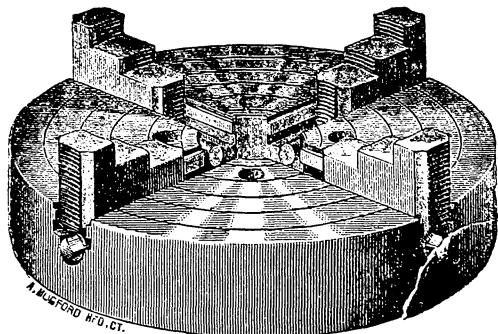
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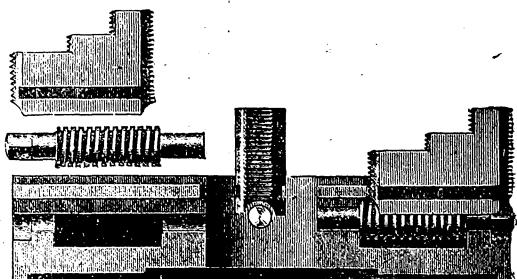
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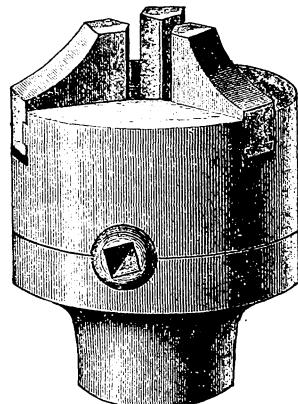
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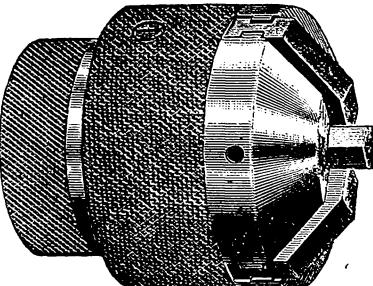
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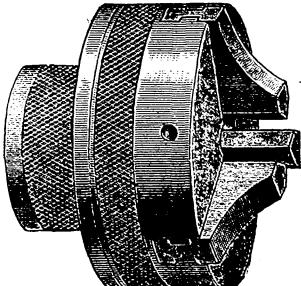
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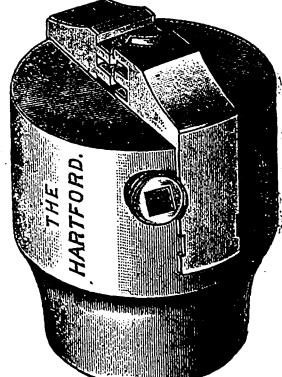
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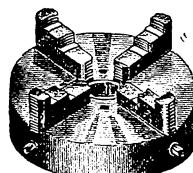


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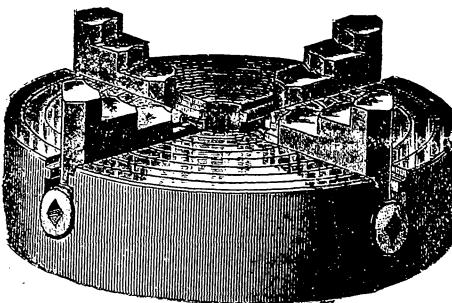


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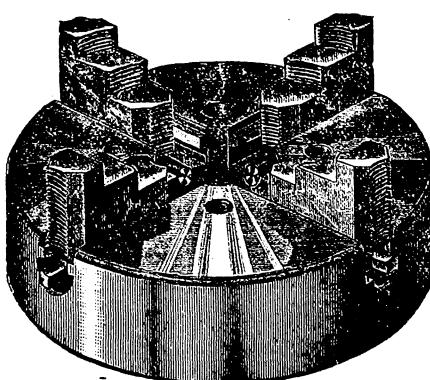
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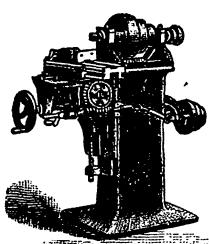
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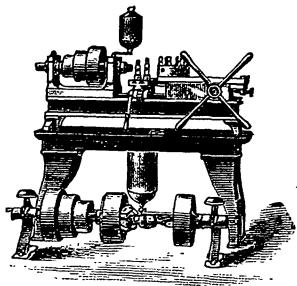
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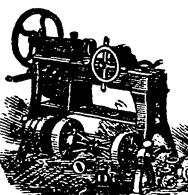


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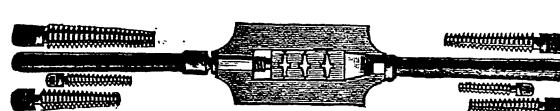
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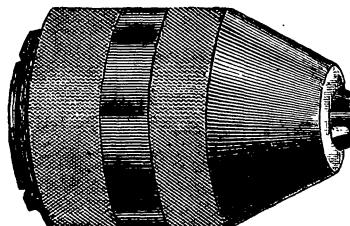


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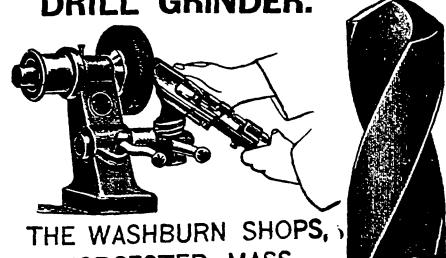
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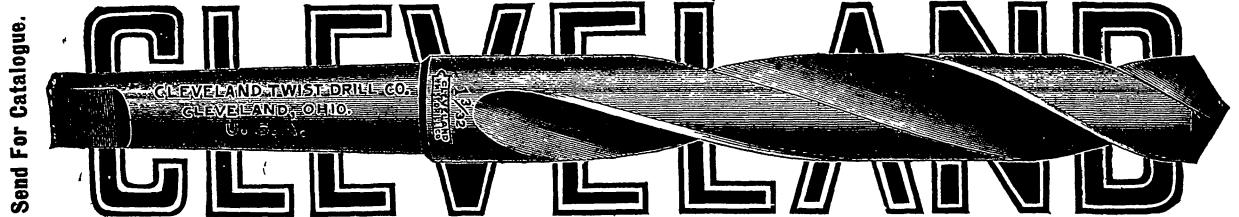
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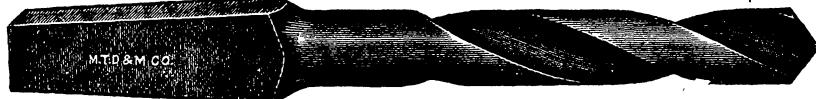
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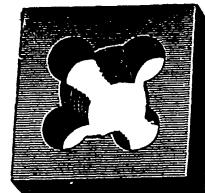
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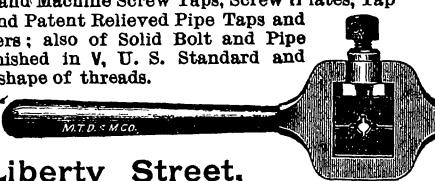
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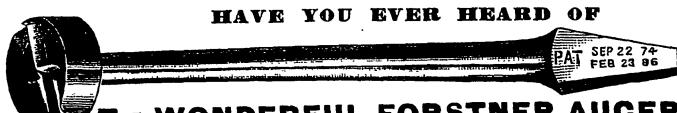
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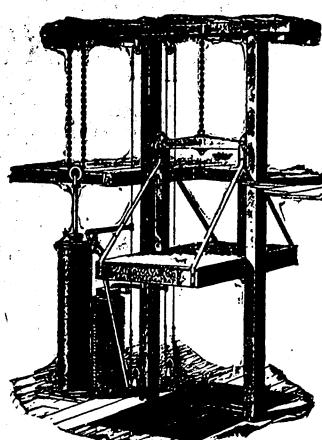
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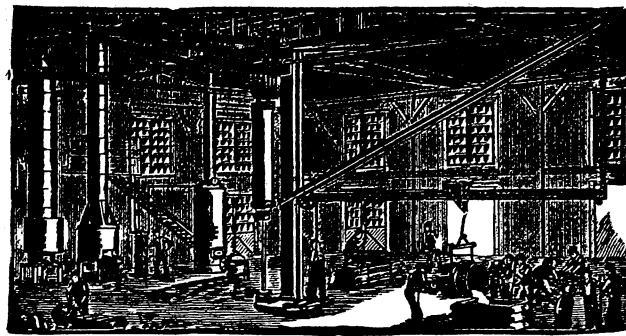
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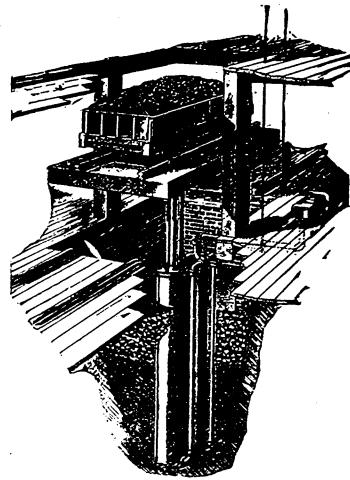
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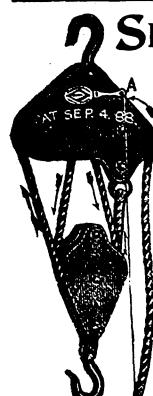
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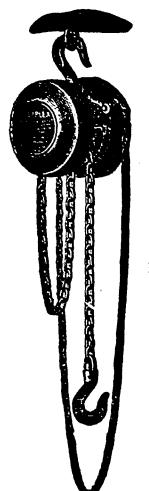
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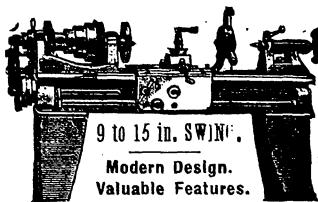
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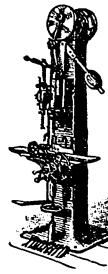
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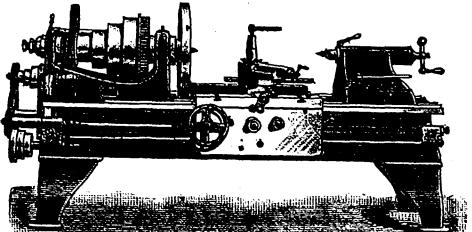


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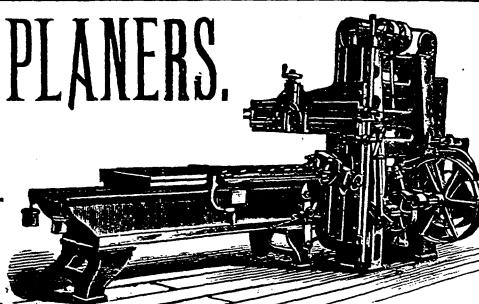
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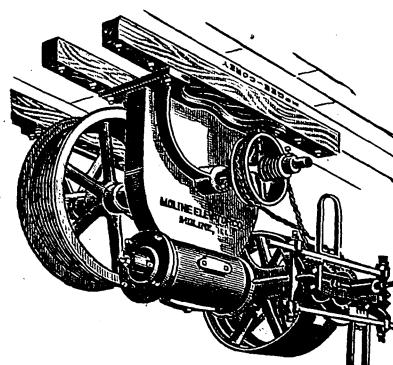
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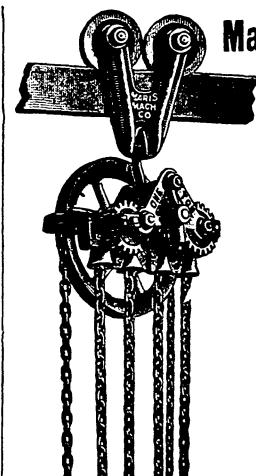
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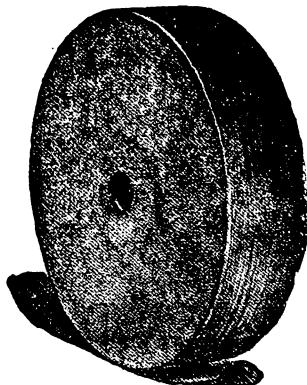
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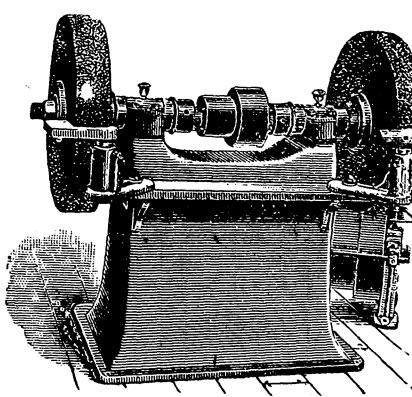
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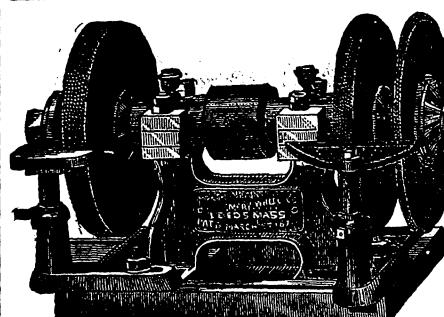
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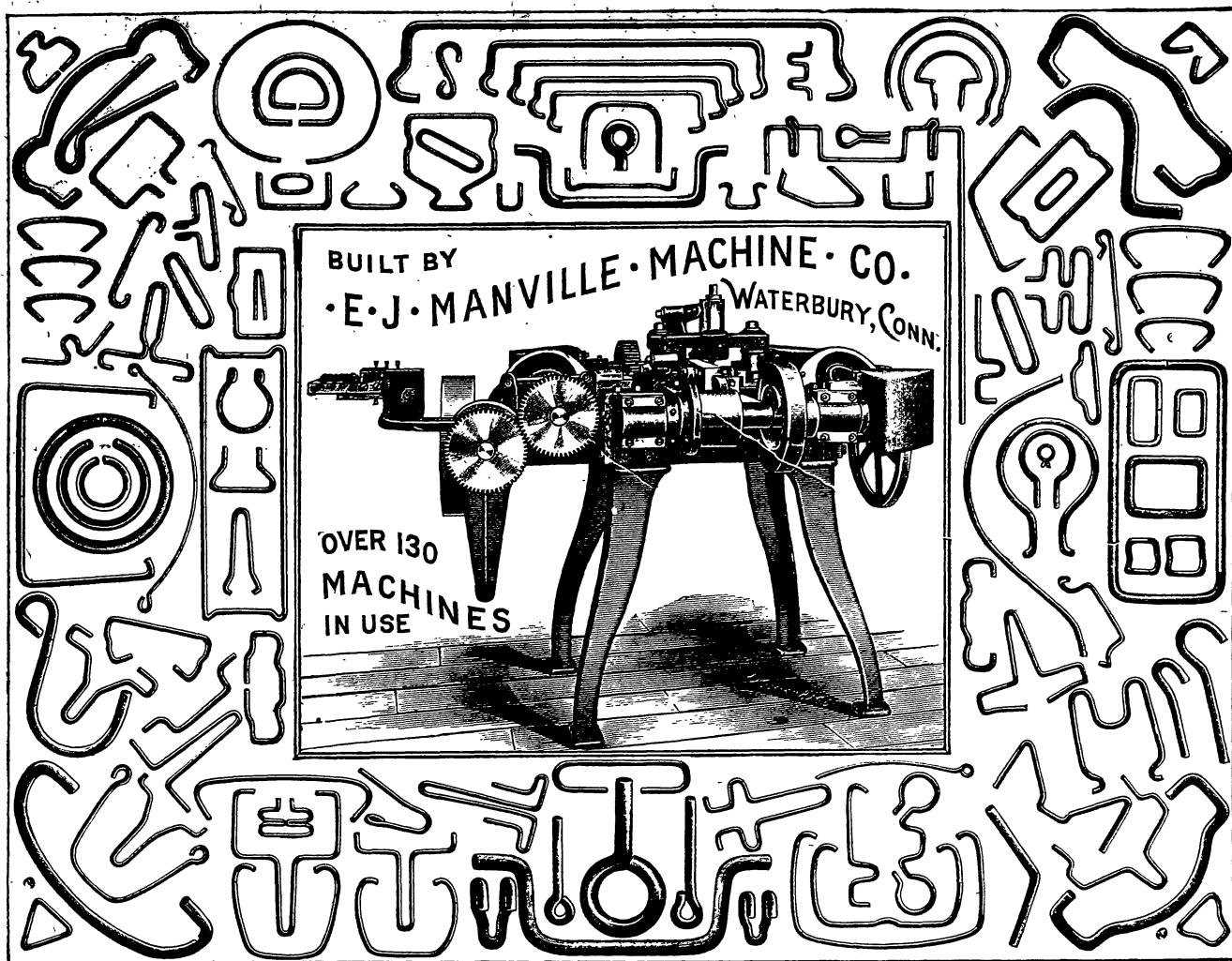
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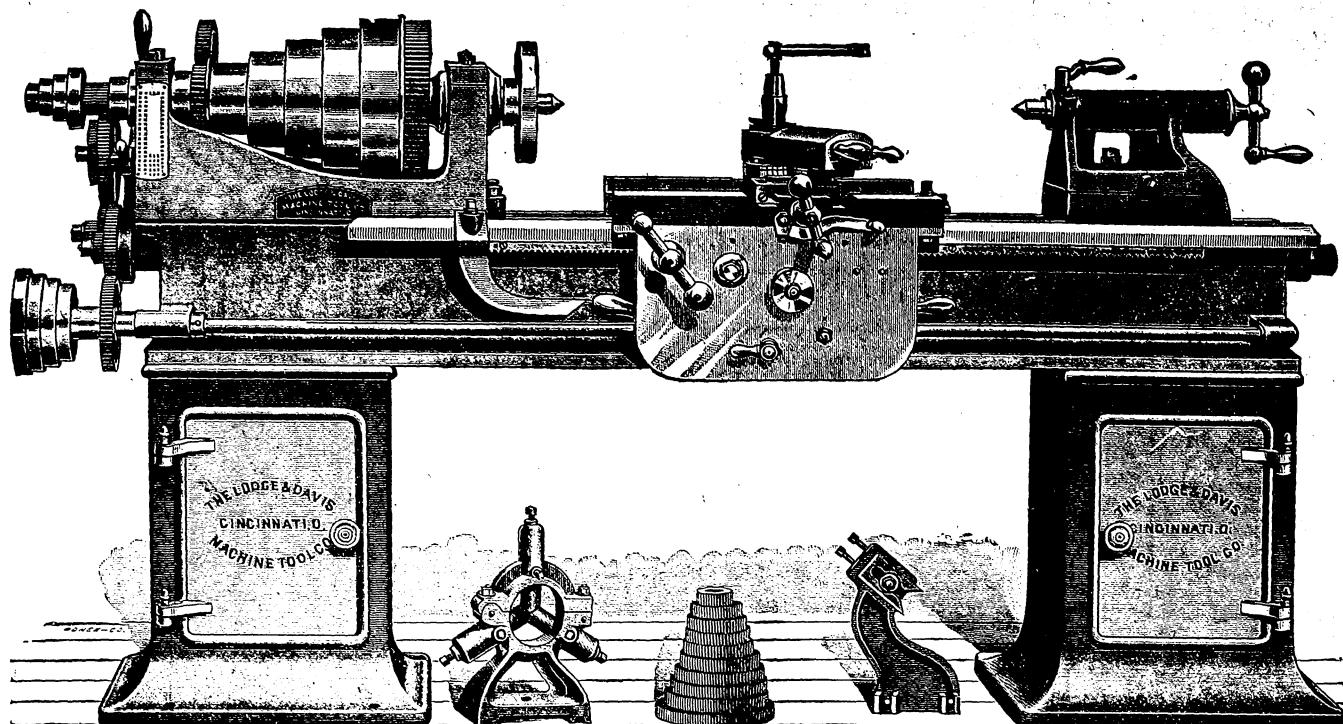
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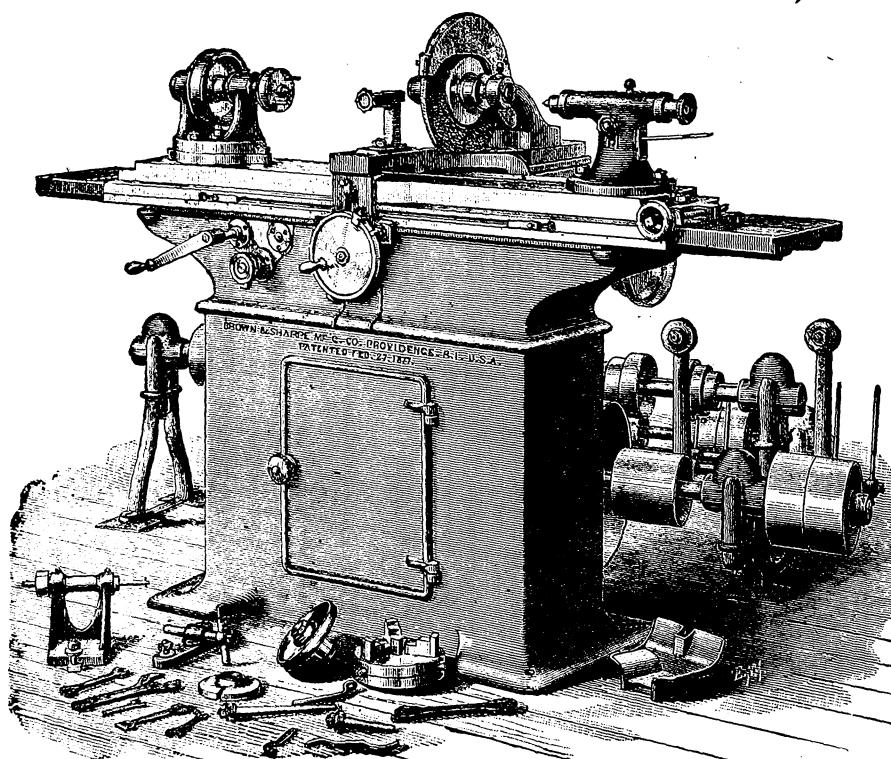
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1 18 ft. 24 in. Lathe.
1 12 ft. 22 in. Lathe. Good order.
1 11 ft. 18 in. Lathe. Good order.
3 6 ft. 14 in. Blaisdell Lathes.
2 6 ft. 15 in. Wood & Light Lathes.
1 6 ft. 18 in. Lathe.
1 Pratt & Whitney Cushioned Hammer.
1 36-in. Back Geared New Haven Drill.
1 Brown & Sharpe Universal Grinding Machine. A1.
2 20-in. Wheel and Lever Feed Drills.
1 Small "Eureka" Steam Hammer.
And various other tools.

NEW YORK MACHINERY DEPOT,
Bridge Store No. 16, on Frankfort St., New York.

FOR SALE.

1 each Garyn No. 2 & No. 4 Milling Machines, 2d hand.
1 22 in. x 11 ft. 8 in. Blaisdell Engine Lathe, " "
1 17 in. x 8 ft. McCormick " " "
1 28 in. x 8 ft. New Haven " " "
1 26-in. Post Drill, second hand.
1 each 22 x 8, 10, 18 Engine Lathes, new.
1 each 62-in. and 82 in. Radial Drills, new.
1 each 20 in. "Lever and "Wheel and Lever" Drills, new.
1 Baker Bros. Universal Saw Bench, new.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
107-113 Culvert St., Cincinnati, Ohio.

FOR SALE.

Fitchburg Machine Co. Vertical Automatic Engine, cylinder 14 in. x 14 in. A large variety of second-hand Steam Boiler Feed and Tank Pumps. F. McSWEGAN & SONS, Dover St. and Franklin Square, N. Y.

A STANDING INVITATION.

"One touch of nature makes the whole world kin,"

Even to the 99th degree,

And we invite **YOU ALL**, when purchasing tickets to the

COLUMBIAN EXHIBITION,

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VIA

PHILADELPHIA,

And when you have visited the

CRADLE OF LIBERTY

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GRAVE OF FRANKLIN,

both of which are to be seen in the
QUAKER CITY,

Come round to our office, within three blocks of the above attractions, and let us have a friendly talk about machinery.

We are Manufacturers' Special Agents, and can save you money on any machinery purchase

For Motive Power, For Iron Working, or for Wood Working,

And verily, when we have reasoned with you, and you have returned to your several homes, you will say each unto his wife, "My trip hath not been unprofitable."

Pennsylvania Machine Co., Ltd.,

29 and 31 N. SEVENTH ST.,

PHILADELPHIA, PA.

FOR SALE—SECOND-HAND.

3 Upright Corliss Boilers, 150 H.-P. each.
1 Locomotive Fire Box Boiler, 50 H.-P.
1 16 x 36 in. Slide Valve Engine.
1 14 x 42 Greene Engine.
1 16 x 42 Babcox & Wilcox.

Large assortment of Knowles, Blake and Worthington Steam Pumps. Write for prices and full description to

D. B. CRUCKSHANK,
Providence, R. I.

I offer 3 20 in. x 24 in. Improved Straight-line
Ingersoll-Sergeant Air Com-
pressors,

built in 1890, and used only seven months at St. Clair Tunnel. Ready for delivery and in first-class condition.

1 24 in. x 60 in. Left-hand **Harris-Corliss**
Engine. May be seen running

F. W. IREDELL,

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Great Bargains

Must be Sold and
Removed.

16 in. x 30 in. Horizontal Engine.
18 in. x 36 in. Horizontal Engine.
24 in. x 36 in. Horizontal Engine.
19½ in. x 48 in. Beam Engine, with
Knowles Condenser.

Write us for what you want.

LOVEGROVE & CO.,

Third and Quarry Sts., Philadelphia, Pa.

SECOND-HAND MACHINERY.

One Pond Machine Tool Co. Iron Planer, 40 in. x 40 in. x 24 ft., with two heads. In fine order.
One Belden 100-lb. Upright Power Hammer.
One 60-lb. Bradley Herve Hammer.
One American Tool Co. No. 2 Cabinet Turret Lathe, with slide rest. In fine order.
One Pratt & Whitney 36-in. Gap Chucking Lathe.
One Pratt & Whitney No. 3 Lincoln Miller. In fine order.
One Iron Planer, 52 in. x 44 in. x 12 ft., with two (2) heads.
Send for circular of Second-hand Machinery in stock.

HILL, CLARKE & CO.,

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MUST BE SOLD and REMOVED AT ONCE.

The entire equipment of the United Electric Traction Company of Marion, N. J., comprising:

31 Engine Lathes, from 14 in. to 48 in. swing.
16 Hand Lathes, from 10 in. to 20 in. swing.
5 Planers, from 24 in. x 5 ft. to 32 in. x 12 ft.
6 Shapers, from 15 in. to 20 in. stroke.
13 Drill Presses, all sizes up to 32 in. swing.
8 Milling Machines, Plain and Universal.
2 Brown & Sharpe Screw Machines.
1 Large Newton Slotting Machine.
1 Large Radial Drill Press.
3 Gould & Eberhardt Automatic Gear Cutters, 36 in., 48 in. and 60 in.
1 Betts Machine Co. Large Horizontal Boring Mill.
1 No. 2 Diamond Universal Grinding Machine.
2 Large Bliss Power Presses.
Also Tool Grinders, Die Sinkers, Tapping Machines, Bolt Cutters, and Large Pattern and Blacksmith Shop Equipments.

These tools are all in A1 condition and of the very best makes in this country. They will be sold at remarkably low prices, and must be disposed of at once. Call at our salesroom and inspect them, or write for complete descriptive circular and price-list.

THE GARVIN MACHINE CO.,
Laight and Canal Sts., New York.

FOR SALE.

One "Washoe" Press for making Axe Polls Pick and Mattock Eyes, weighing about 25,000 lbs., in good condition.

DANIEL L. HEISKELL,
Wheeling, W. Va.

RAILS FOR RELAYING.

100 to 200 tons 25-lb. Steel Ts. Penna. Steel Co.'s Pattern No. 45.
75 to 100 tons 60-lb. Steel Ts. Penna. Steel Co.'s Pattern No. 5.
1200 tons 56-lb. Steel Ts. Bethlehem Iron Co.'s make.
Two 30-ton standard gauge Baldwin Switching Engines.
Two 36-in. gauge Saddle Tank Locomotives. Send for details and prices.

THOS. P. CONARD,

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ENGINES FOR SALE.

30 x 60 Harriss Corliss. 50-ton wheel.
24 x 36 Babcock & Wilcox. 25-ton wheel.
20 x 60 (pair) Harriss Corliss. Wheel 24 ft. x 78 in.
18 x 48 Harriss Corliss. Wheel 16 ft. x 24 in.
16 x 48 G. H. Corliss. Wheel 10 tons.
14 x 18 High Speed Automatic.

12 x 12 " " " (Ball).
90 H.-P. Dick & Church Compound.
25 H.-P. Westinghouse Standard.
Knowles Deep Well Pump; 12 x 24. Steam Cylinder.
Lighthall Surface Condenser. 1500 sq. ft. cooling surface.
Stock list mailed on application.

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SECOND-HAND MACHINERY.

Boring Mill, 10 ft. 4 in. swing, 56 in. under cross rail, table 7 ft. 6 in. in diameter.
Boring Mill, 8 ft. 4 in. swing, 48 in. under cross rail, table 6 ft. 6 in. in diameter, two heads on cross rail.
76-in. Planer, 18 ft. long; heavy and powerful.
48-in. Car Wheel Borer.
Axle Lathe.

Write for photographs and further particulars.

NILES TOOL WORKS CO.,
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THE FOLLOWING Second-hand Engines, Boilers and Machinery of the best modern make, guaranteed in perfect condition:
One 100 H.-P. Corliss engine. One 60 H.-P. automatic Atlas engine. One 10 to 100 H.-P. horizontal slide valve engines. 8 to 60 H.-P. vertical engines. 4 to 10 H.-P. yacht engines. 2 to 10 H.-P. Baxter engines and boilers. One 4 H.-P. Otto gas engine. 6 to 20 H.-P. holsting engines with boilers. 2 to 100 H.-P. vertical and horizontal boilers. One 75 G.-P. locomotive boiler. Several steam pumps of different sizes. One each 36 in. x 10 ft., 36 in. x 9 ft., 24 in. x 12 ft. Planers. One large Bement Milling Machine. 20 in. x 8 ft., 15 in. x 7 ft., 18 in. x 6 ft., 13 in. x 6 ft. Blair Lathe, all new, bargains. Two 20 in. x 6 ft. turning lathes; 16 in. hollow spindles, rod feed, with taper attachments. One 6-in. shaper. One 38 in. x 8 ft. and one 30 in. x 7 ft. planer. Two grinders for twist drills. Large Springfield tool grinder. 15-in. jointer. 5-in. air compressor. No. 3 and 4 Bement milling machine. One 20 in. x 10 ft. and 18 in. x 11 ft. screw Lathes. Two large Presses. Boiler rolls. Punch and shears. Radial drill. 25-lb. Bradley and 10 lb. Hotchkiss hammer. New ammonia compressor and engine for ice making, 15 to 20 tons capacity. 2 10-in. exhaust heads. 1 large stone crusher. 1 road roller. Large stock of new engines, boilers, machinists' tools and supplies. Catalogues. **FRANK TOOMY, 131 North 3d St., Phila.**

SOME BARGAINS HERE.

1 Hendey Shaper, 15 in. stroke, imp. vise; new.
1 14 x 6 Screw Cutting Engine Lathe; new.
1 H.-P. Comb. Engine and Boiler. Fine condition.
Hendey Cutting-off Machine. New.
1 3-Spindle Garvin Drill Press, used 1 month.
72 x 72 x 20 Planer. 2 Cross Heads.
1 75 H.-P. Westinghouse Automatic Engine.
1 25 H.-P. Erie City Boiler; good condition.
And other machinery, new and second hand. Write for prices. **Machinists' Supply Company**, 39, 41 and 43 Central Ave., Rochester, N. Y.

FOR SALE.

One Stationary Double Cylinder Steam Crane, capacity 5 tons.
One Bookwalter Steel Converter, complete.
CHICAGO HORSE SHOE CO., E. Chicago Ind.

Iron Tanks, Hydraulic Press, Corliss and other Automatic Engines, Slide Valve Engines, Boilers, Steam Pumps, etc., etc.

TANKS.—Rendering Tanks, Square Tanks, Round Tanks, and Pans; from Soap Works, cheap before removal.

HYDRAULIC PRESS, 600 to 800 tons, with R. Hoe & Co. Air Pump for same.

CORLISS ENGINES, 30 x 72, 30 x 60, 28 x 48, 23 x 36, 10 x 24, and other sizes; also other Automatic and Slide Valve Engines.

HORIZONTAL BOILERS, 5½ x 16, 5½ x 14, 5½ x 10, 5 x 18, 4½ x 12, and others. Brennan Crusher, 8 x 25. Bogardus Mill. Ingersoll Rock Drill. Woodward Double Fire Pump, 1000 gallons. Worthington Duplex Pump, 25 x 12 x 24. Four-side Wood Planer and Matcher. Also assortment of Steam Pumps.
Send for catalogue.

G. M. CLAPP, 74 Cortlandt St., N. Y.

FOR SALE.

BAKER BLOWERS, Nos. 1, 3, 4, 4½, 5, 6 and 7
ROOT BLOWERS, Nos. 1, 2, 3, 4, 5, 6 and 8.

Surtevant Blowers, Nos. 5, 7 and 8.
12 and 15 H.-P. Horizontal Boilers; new, very cheap. 10 in. x 7 in. Blake Crusher; equal value. Corliss Engine, bared wheel in halves, 12 ft. x 24 in. x 9 in. hole. Large Sander & Boschert Press. 1 Niagara Wheel Pump, 14 in. x 7 in. x 10 in., brass lined. Purchasers of machinery and those who have it for sale will do well to correspond with C. R. BIGELOW, Machinery Expert and Appraiser, 45 Dey St., New York City.

LARGE ENGINES.

We have for sale cheap:
One 300 H.-P. Gummer Horizontal Engine, complete.
One 250 H.-P. Slide Valve Horizontal Engine, complete.
Must be moved at once. Address
C. W. SCHULTZ & CO.,
308 Walnut St., PHILADELPHIA.

MACHINE TOOLS, New and Second-hand, For Sale.

Hendey's "Morton" Screw Cutting Lathes. Cut 12 threads without changing any gears. 38 speeds for the side feed.
Gavin Screw Machines.
Dwight Slatte Sensitive Drills.
A line of second-hand Tools, also small Electric Fan Motors.

DANIEL KELLY,
51 N. 7th St., Philadelphia, Pa.

New York Safety Engine, 9 x 12.
Upright Drill, 20-in. swing.
Plain Engine, 12 x 9.
Belt Wheel, 3 ft. diam., 20 in. face, 7 in. bore.
Belt Wheel, 10 ft. diam., 18 in. face, 6½ in. bore; split.
Belt Wheel, 11 ft. diam., 18 in. face, 13 in. bore; split.
Large assortment New and Second-hand Machinery, Shafting, Pulleys, Belting, Tools, Iron, &c.

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JOB LOTS,

Special lots; (also second-hand) Supplies, Machinery, &c., bought, sold and exchanged. If you wish to buy or sell, write me.

H. H. MANSFIELD,

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For Sale, Cheap LOCOMOTIVES AND CARS.

Standard and narrow gauge boarding, box, coal, flat, refrigerator and passenger Cars. Also large quantities of relaying and scrap rails, car wheels and scrap, pig iron, muck bars, &c.

G. H. SIBELL & CO.,
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ENGINES.

For sale at half price, if sold at once, one 350 horse-power and one 200 horse-power Automatic Cut-off Engines. Also one 70 horse-power Trottling Engine. These engines are guaranteed; they are finished at the shops and ready for immediate delivery. Address

"HALF PRICE,"
office of **The Iron Age**, 98-102 Reade St., N. Y.

FOR SALE, CHEAP.

Eight Steam Cranes, 24 Iron Ore Buckets, 24 Trucks and 8 Overhead Dump Cars, all of which have had very little use and are in good condition; can be seen in Cleveland.

Andrews, Hitchcock & Co.,
420 Perry-Payne Building,
Cleveland, O.

FOR SALE.

One pair large heavy Plate Steel Pyramid Rolls, 9 in. x 100 in. inside the housings. New and never been used.

P. O. BOX 254, Pittsburgh, Pa.

FOR SALE AT ROCKAWAY, N. J.

A valuable Mill Property in first-class condition, on the line of the D. L. & W. and N. J. Central Railroads, containing 14 acres of land, water and steam power, two turbine wheels, one large mill, suitable for axe or machinery works, three new two-story blacksmith, machine and pattern shops, three dwellings, dynamo and other buildings. The water is pure and suitable for silk or paper factories or dye works. Apply to W. A. TORREY, 6 Wall Street, New York.

FOR SALE.

American, Canadian and English patent rights of Hubuer's Multiple Bolt Threading Machine; will screw 10,000 bolts a day. Apply

J. COCKSHOTT,
136 Liberty St., New York City.

BICYCLE MANUFACTURING PLANT FOR SALE.

Located in a prominent Western city and adapted to the manufacture of bicycles of any grade. Capital required, \$75,000 to \$100,000. Good orders for season of 1894 assured. For particulars apply to

THE R. M. CO.,
P. O. Box 31, Cincinnati, Ohio.

FOR SALE.

Compound Pumping Engine.

Made by Cuyahoga Steam Furnace Co., Cleveland, Ohio. Eight million gallons capacity per day. Engine is now in use and is in good order, but soon to be replaced by a larger engine. Address for information, &c.,

A. I. SANGER & HARRIS BROS.,
Cleveland, Ohio.

WANTED.

A competent man as Superintendent in a branch of the iron and steel industry. One acquainted with rolling mill and other machinery, and who would loan \$15,000 and have an interest in the business. This is a favorable opportunity for the right party. Address

"PRINCIPLE,"

office of *The Iron Age*, 96-102 Reade St., N. Y.

WANTED.

First-class Builders' Hardware firm in each city to take the exclusive agency for Howarth's Patent Sash Centers. Ten hundred and sixty sets have been used on one building. Architects are specifying them repeatedly; over 100 buildings have been supplied. Large discounts. Address

Howarth Reversible Sash & Sash Center Co.,
Detroit, Mich.

FOR SALE.

A very valuable U. S. Patent for a Gas Furnace. It gives a complete combustion of the gas and prevents the tar from condensing before going into the furnace. It is very economical and inexpensive, and can be put into any existing furnace or boiler. It has been in practical operation for three years and can be seen at any time. Inventor has had practical experience with furnaces for 30 years. All further particulars can be had on application to

JOHN ELLIOT, Ansonia, Conn.

Any Company

contemplating the expenditure of a large amount in the establishment of a manufacturing industry, requiring the use of a thoroughly equipped Machine Shop, Boiler Shop, Foundry and Smith Shop plant, well located on competing trunk lines of railroads and in a good labor market, is invited to address

STIMSON, WILLIAMS & CO.,
Bryant Building, 55 Liberty St., New York.

FOR SALE OR RENT.

Manufacturing Property.

Having purchased the Auburn Manufacturing Company's plant, with greater facilities for manufacturing carriage forgings, which my increasing trade demands, I offer my former plant for sale or rent, which consists of two-story stone and wood building, 80 x 30, and three-story stone and brick building, 75 x 40. Also forge shop, 22 ft. posts, 150 x 54, with large double windows between each bent, 50 x 30 boiler house. Splendid water power, 11 ft. head. One 64-in. American Turbine.

One 24 in. Little Giant Turbine.
200 ft. 2½ Cold Rolled Iron Shafting.
40 ft. 2½ Cold Rolled Iron Shafting.
60 ft. 2-in. Cold Rolled Iron Shafting.
Furnished with self-oiling boxes. Water wheel governor; 4-ton Buffalo Scales. The premises cover about 2½ acres. Shipping facilities of the best. Located near N. Y. Central and Philadelphia and Reading depots. Will be sold cheap and on easy terms or rented. For particulars address

RICHARD ECCLES, Auburn, N. Y.

WANTED.

Responsible parties to manufacture and sell on royalty, a cheap portable steel or iron CULVERT BRIDGE; it is adapted to all small streams, runs, etc., in roads, streets, RAILROADS, etc.; improved roads is the order of the day; use this bridge, put it below the level of the road, cover it over and thus prevent jarring and wear and tear of vehicles, etc. Apply to

W. A. NICHOLS,
Girard Building, Philadelphia, Pa.

RARE BARGAIN. For Sale, Business and Property.

An established **Hardware** business of ten years' standing at Santa Fe, New Mexico. Stock fixtures, etc., well assorted and in first-class condition. Large store building and warehouses; lot 66 feet running through from street to street. Largest trade, leading trade (almost exclusive cash); good location. All goods at cost and carriage. No bonus required for good will of trade. Water storage for irrigation now building by Eastern capitalists at estimated cost of \$250,000. The climate has not its equal anywhere; altitude, 7000 feet. Terms spot cash. Reasons for selling, wish to retire from business. Only those who mean business need apply. Please call on or address E. D. FRANZ, Santa Fe, New Mexico.

CHARLES GOOCH, Commercial Salesman,

to towns of 5000 and upwards, including Cincinnati, Pittsburgh, Cleveland, Detroit, Chicago, St. Louis, Louisville and intermediate territory.

Residence, No. 432 Kemper Lane, Cincinnati.
Correspondence solicited.

Any Manufacturer

of Hardware or Machinists' Specialties desiring to be represented in New York City and vicinity, will find it to his interest to address

E. J. HUSSEY & CO.,
86 John St., New York.

We are centrally located, active workers and can furnish best of references.

EUGENE BISSELL, Auctioneer.

HAYDOCK & BISSELL
Successors to
ROBERT R. HAYDOCK & CO. and E. BISSELL & CO.
WHOLESALE

HARDWARE AUCTIONEERS,

12 Murray St. and 15 Park Place, N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

FOR SALE.

A light Hardware manufacturing business;

\$2000 to \$3000 required. Address

"LIGHT HARDWARE,"

Office of *The Iron Age*, 96-102 Reade St., N. Y.

AMERICAN MANUFACTURERS

of Hardware Specialties and Machinists' Tools, who are willing to place the sale of their goods in the hands of an old hardware firm of the highest standing whose salesmen cover the entire United States, will please communicate with "W. F. & B." office of *The Iron Age*, 96-102 Reade St., N. Y.

FINANCIAL.

Wanted, Business Manager for engineering business; one acquainted with engineering and manufacturing business preferred. Must be of high standing and capable, and able to furnish first-class references and to control a small amount of capital. To the right man an unusual opportunity is open to get a good and paying position where money invested will pay large returns without risk. Address "FINANCE," office of *The Iron Age*, 96-102 Reade St., N. Y.

Factory Sites Free.

At Keyport, N. J. Twenty miles from New York, on Raritan Bay. Boat and train communication with New York and other markets; water works and other advantages. Reasonable inducements to responsible manufacturing concerns. Address

KEYPORT BOARD OF TRADE.

Collection!

ATTENTION! Merchants and Manufacturers.—We collect your past due accounts. Do not let them remain too long upon your books. Our terms just and fair.

THE HARDWARE BOARD OF TRADE, Ltd.,
4 and 6 Warren street, New York.
JAS. H. GOLDEY, Treas.

CHARLES WEILAND.

I make a special business of buying and selling Job Lots of

HARDWARE AND CUTLERY.

Tools and Second Quality Files a Specialty.
Send for Catalogue.

143 Chambers St., New York.

REMOVAL.

The Frasse Company, after occupying their old stand at 92 Park Row for upward of 50 years, have removed to 19 Warren St., near Broadway, where they will carry a large and varied assortment of Tools for every branch of the Mechanical Trades. A specialty is their line of Cycle Repairers' Tools. Chesterman Tapes, Stub's Goods and Fischer Files are some of the specialties they sell.

WANTED.

To furnish reasonable estimates on specialties in light metal work.

CLARK & COWLES, Plainville, Conn.,
Manufacturers of Clock Trimmings, Rivets,
Springs &c.

LAMBERSON'S

Old Reliable

HARDWARE PRICE BOOKS.

Send for new Illustrated Circular.

BUELL LAMBERSON,
PORTLAND, OREGON.

KEEP BOOKS

by WEST'S New Original-ENTRY LEDGER.

Make the same entry but once. A Ledger in place of a full set of books. Convenient forms for all entries. Easily applied, simple, saves time. West's Self-Proving Balance locates every error. Send 3 cent Stamps for illustrated 16-page pamphlet.

WOLCOTT & WEST, Syracuse, N. Y.

C. F. RICE,
206 So. Green St., - - CHICAGO.

Largest wholesale house in America for Mirrors of all kinds, Pictures, Mouldings, Frames, Brackets, Easels, Screens and kindred goods. Large illustrated catalogue sent to dealers upon application.

A BARGAIN.

Must be sold and removed.

For sale, one 10-inch Drop Press; several Crosby Power and Hand Stamping Machines, with some 60 different dies and a large number of other machinery and tools used in manufacturing lanterns, railroad tubular, fruit cans, wainscoting and ceiling. All new machines, not run over 60 days; at a low figure for immediate disposal. Have also for sale second-hand Boilers, Engines (Portable and Stationary) and one 7-inch Houston four-sided Planer and Molder.

JOHN M. KRAMER & BRO. MACHINE WORKS,
Maria Stein, Ohio.

AGENCIES WANTED.

Manufacturers desiring representation in St. Louis would do well to correspond with "AGENCY," office of *The Iron Age*, Bank of Commerce Building, St. Louis, Mo.

Street Railway and Car Shop Specialties preferred.

WANTED.

Second-hand Bull Dozer Pair Squaring Shears, medium size. Give particulars.
BOX 338,
office of *The Iron Age*, 59 Dearborn St., Chicago.

WANTED.

One 10 x 10 and also one 10 x 12 or 12 x 12 Furnace Hoisting Engines; either the Otis or Crane type. Address

ROANE IRON CO., Rockwood, Tenn.

WANTED.

Some one to manufacture in sheet metal a small pocket novelty. Address
E. H. ROONEY,
No. 938 Bartlett St., Milwaukee, Wis.

A RARE OPPORTUNITY.

Wanted, a thoroughly competent and reliable hardware man to purchase a part of the interest of one of the owners in a wholesale and retail hardware business. The house does a business of over \$300,000 yearly. Located in a city of over 100,000 population. Has several salesmen on the road. Business established in 1875; incorporated with paid up capital of \$150,000. Reason for selling a part of the stock, ill health. To a party who is capable and satisfactory, an interest in the business can be obtained, and be placed in an important office in the corporation with salary. Address
S., Post Office Box 237, Topeka, Kansas.

\$99.50 FREE.

For 50c. I will send you a pamphlet containing 50 well written advertisements, each of which is worth easily \$2.00. If you want to catch the trade of your town send 50c. in stamps and get pamphlet by return mail.

Thousands already in use.

J. A. DUFFY, - 118 Main St., Hannibal, Mo.

HELP WANTED.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar - each insertion. Additional words two cents each.

BUSINESS MANAGER wanted.—A large, growing and successful business in heavy iron manufacturing wants a capable and experienced man to manage the business end; the manufacturing part is ably provided; state qualifications, experience and ideas of salary. Address "HEAVY IRON," office of *The Iron Age*, 96-102 Reade St., New York.

FIRST-CLASS sober Heater wanted to heat scrap piles for 10-inch mill; good wages, steady work. Address with references, "HEATER," Box 622, office of *The Iron Age*, 96-102 Reade St., New York.

ASUPERINTENDENT to take charge of a manufacturing enterprise; goods manufactured consist of heavy wagons, agricultural implements and special iron work; applicant must be good draftsman familiar with both wood and iron working machinery and experienced in handling men. Address, giving references and stating salary expected, A BALDWIN & CO., Limited, New Orleans, La.

A MAN TO TRAVEL through New England and the Eastern States; one acquainted with the nail business. Address "NAILS," No. 622, office of *The Iron Age*, 96-102 Reade St., N. Y.

A THOROUGH business man to take charge of malleable iron foundry of 125 molders, Address "MALLEABLE," Box 622, office of *The Iron Age*, 96-102 Reade St., New York.

COMMISSION SALESMAN wanted to sell Stransky steel ware (imported enameled ware) as a side line from pocket sample and illustrated catalogue: state territory. STRANSKY & CO., 27 Murray St., New York.

A MAN TO TAKE CHARGE of a steel casting foundry; must be a first-class molder and give experience, with reference; none need apply who does not thoroughly understand the business. Address "STEEL CASTINGS," No. 622, office of *The Iron Age*, 96-102 Reade St., N. Y.

PHILADELPHIA jobbing hardware house desires thoroughly posted man to take charge of orders and assist in managing business. Address "BUSINESS," P. O. Box 1086, Philadelphia.

CHEMIST and Clerk wanted at furnace near Philadelphia as Assistant. Address "CHEMIST," Loc. Box 1086, Philadelphia.

PIG IRON SALESMAN.—One having acquaintance with New England or Eastern Pennsylvania trade preferred. Kindly state particulars to "PIG IRON," office of *The Iron Age*, 96-102 Reade St., New York.

MANAGER WANTED.—A company now manufacturing one of the leading high grade bicycles in the country, desire to negotiate with a competent, experienced man to take the position of practical manager of their factory; a man possessing all the necessary qualifications will find it to his advantage to correspond with "BICYCLE," office of *The Iron Age*, 96-102 Reade St., New York. All letter will be considered confidential.

SITUATIONS WANTED.

Undisplayed Advertisements for Situations Wanted not exceeding fifty words Fifty Cents each insertion. Additional words one cent each.

A N EXPERIENCED hardware Salesman desires a position to travel in the South for hardware jobber or cutlery manufacturer; references furnished; open for contract beginning September 1, 1893. Address Box 29, Concord, North Carolina.

CHEMIST, experienced in iron analysis, open to engagement; willing to assist in work outside of laboratory; highest references. Address "IRON ANALYSIS," office of *The Iron Age*, 96-102 Reade St., New York.

SUPERINTENDENT or Manager, by a man with 18 years' experience in machine shops, foundries and rolling mills; for six years general superintendent of large concern manufacturing frogs, switches and general railroad supplies; for five years general manager of large concern operating rolling mills and coal mines in the South; engaged now; can give satisfactory reasons for changing; can give the very best of references from men well known in the iron business in Eastern Pennsylvania. Address "SUPERINTENDENT," office of *The Iron Age*, Bank of Commerce Building, St. Louis, Mo.

POSITION with some good manufacturer or to represent a manufacturer in this city or elsewhere; have had several years' experience among architects in New York City and vicinity. Address "ARCHITECTS," 622, office of *The Iron Age*, 96-102 Reade St., New York.

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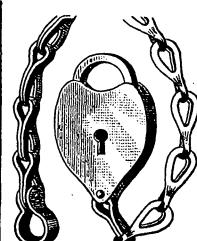
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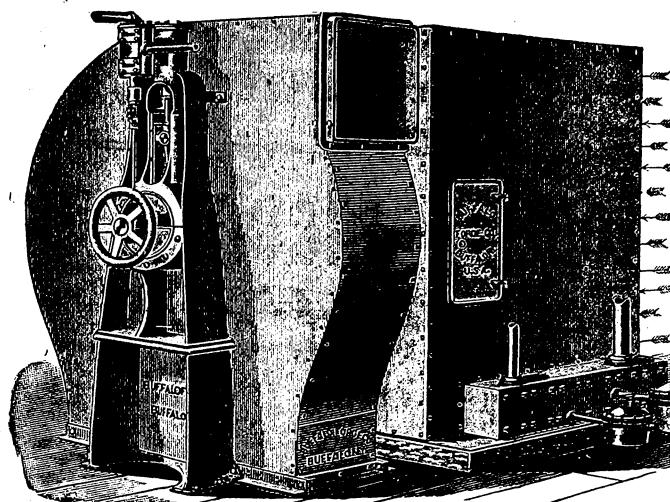
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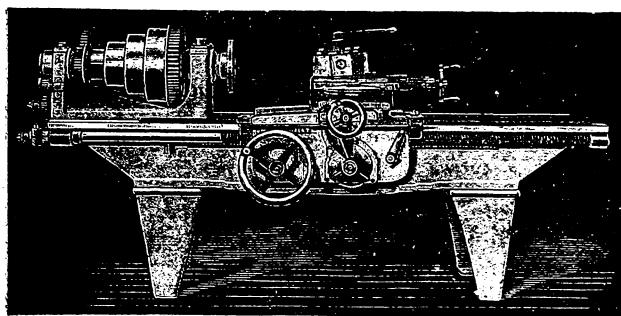
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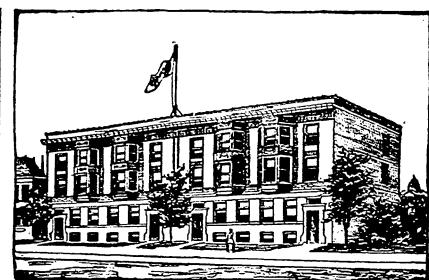
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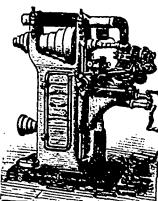
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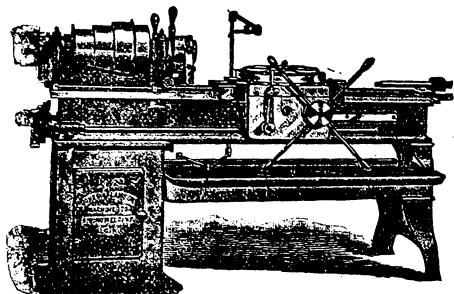
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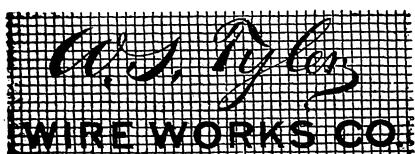
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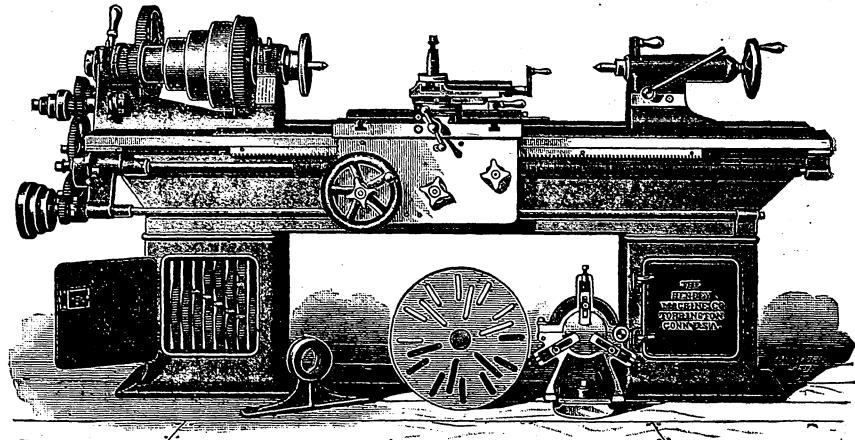
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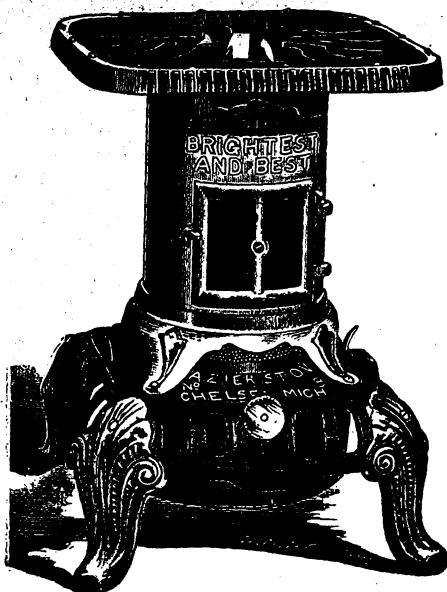
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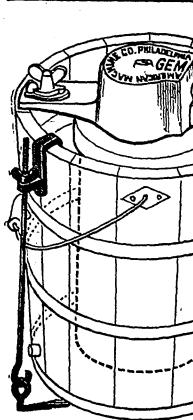
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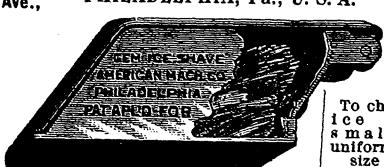
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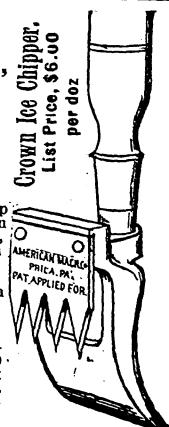
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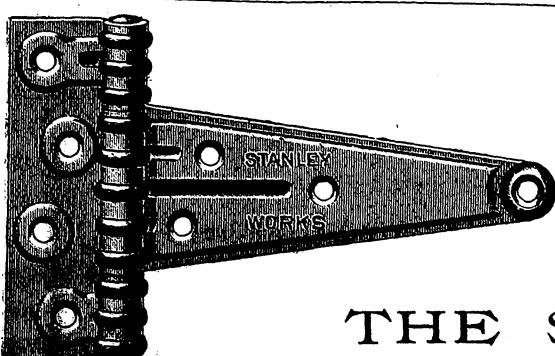


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It may be maintained that there would be

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Keep out in the open air, but do not over-exert yourself in exercising. Use a Bicycle because **Mechanicians** estimate that it requires

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less force for a person to propel himself on a Bicycle one mile than would be needed to walk the same distance.

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CLARK'S BEST QUALITY SCREW DRIVERS.



Four Drivers and one Handle; all interchangeable; are hardened and tempered all over; made of best stock, and finished first-class.

FOR SALE BY ALL HARDWARE DEALERS.

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You can rest on the quality.
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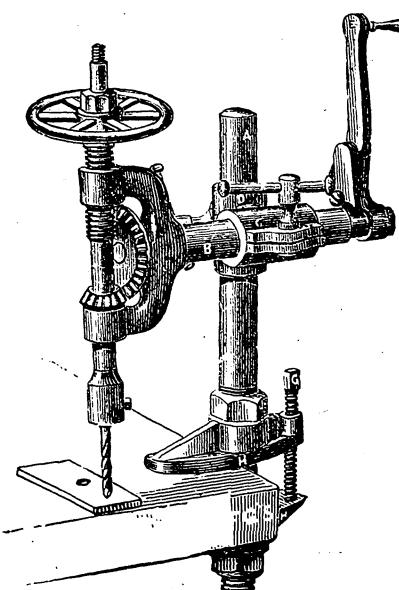
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HAIR FELTING for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

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These Angular and Ratchet Drilling Machines are made of steel and are fast coming into general use especially among Electric Railway and Lighting Companies. For repair work in mills they are much used, as they can be attached to a broken machine without taking it apart, and swung around to drill at any angle. Made to fit $\frac{1}{2}$ inch Drill Shanks. We send a chuck with each machine to hold all drills smaller than $\frac{1}{4}$ inch.

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No. 1. Weight, 26 lbs. Drills up to $\frac{5}{8}$ in. hole.	\$20.00
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The No. 2 Drill has two sets of gears, making either speeded or geared back machine.

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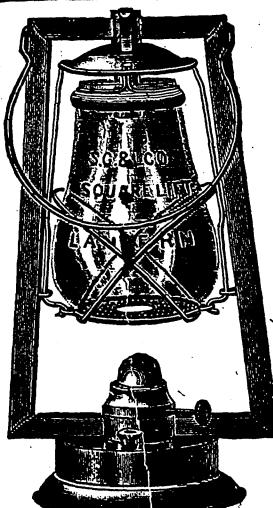
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Patented July 3, 1888.

STRONGEST and QUICKEST SCREW DRIVER in the market. One Tempered Steel Bit furnished with each Driver FINELY POLISHED and HEAVILY NICKEL PLATED. Lignum Vitæ Head. LENGTH OVER ALL, 18 inches. Each one in a separate wooden box with slide cover.

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Steam Gauge AND Lantern Co.

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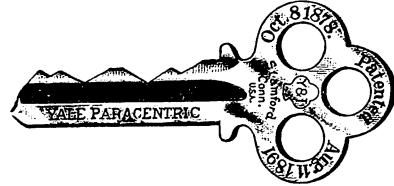
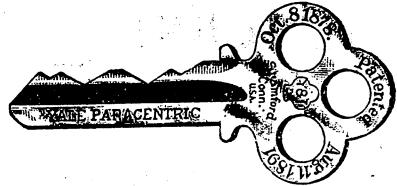
Tubular Lanterns,

Tubular Street Lamps,

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Tubular Station Lamps,

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YALE PARACENTRIC



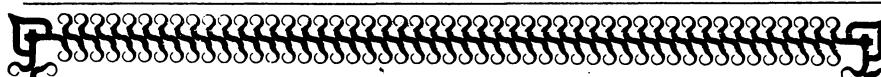
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THE YALE & TOWNE M'F'G CO.,

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THE DEALER who sells what
THE PEOPLE ask for

MAKES FRIENDS and MONEY, and
SAVES TIME and TROUBLE.

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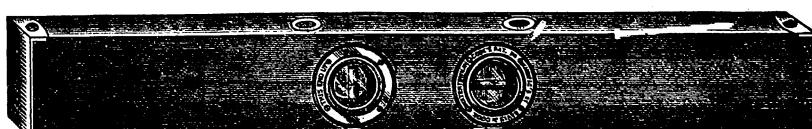
And the people are right.

It is the strongest and best glue made. It has been
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Made in Wood and Iron. Every Level Fully Guaranteed.

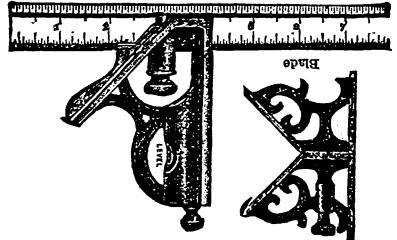
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Pumps, Hydraulic Rams, Garden Engines,

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A LARGE CAPACITY, AND EASY WORKING PUMP FOR

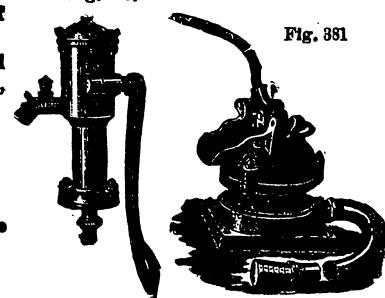
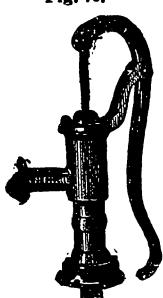
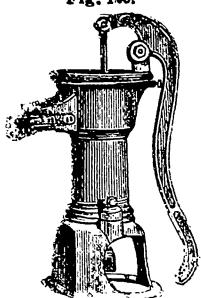
Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 120.

Fig. 76.

Fig. 209.

Fig. 381



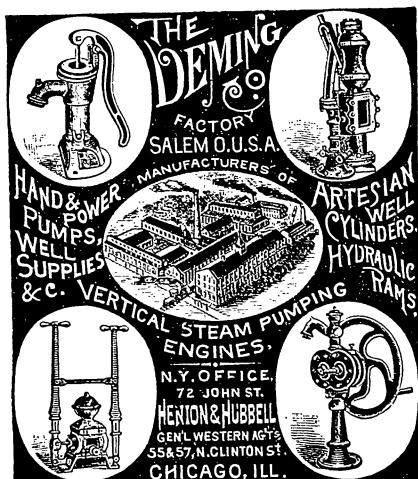
or wherever it is desired to raise a large quantity of water by hand power.

The pump has large valves (accessible by hand) and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

Capacity from 3,000 to 4,500 gallons per hour.

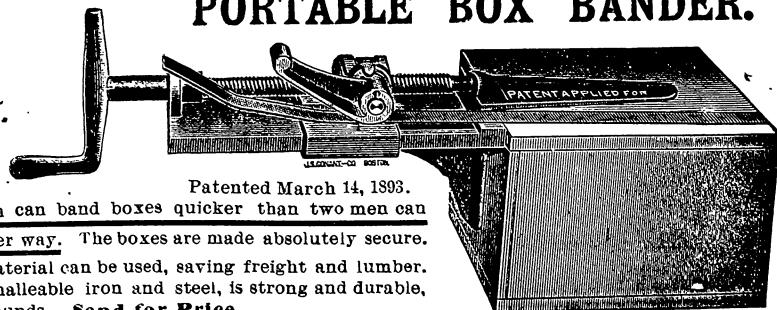
These pumps are simple, durable and low priced. Made either as shown in cut for Hose or for IRON Pipe. Suction underneath.

Send for Circular and Price List.



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ITSELF.

PORTABLE BOX BANDER.



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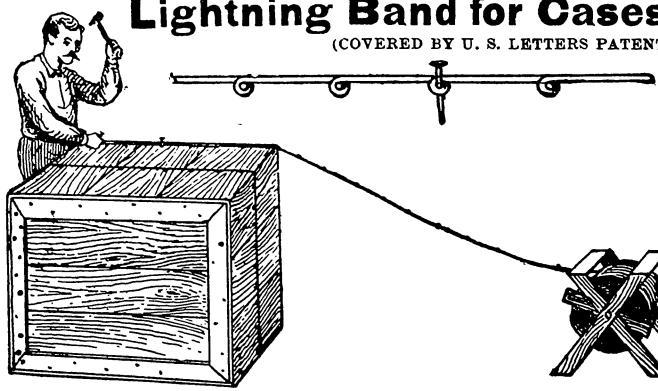
One man can band boxes quicker than two men can in any other way. The boxes are made absolutely secure. Lighter material can be used, saving freight and lumber. Made of malleable iron and steel, is strong and durable, weighs 8 pounds. Send for Price.

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(COVERED BY U. S. LETTERS PATENT.)



Mounted on reels and always ready for use and convenient to handle. Easily and quickly binds shipping cases and crates in a neat, strong and substantial manner.

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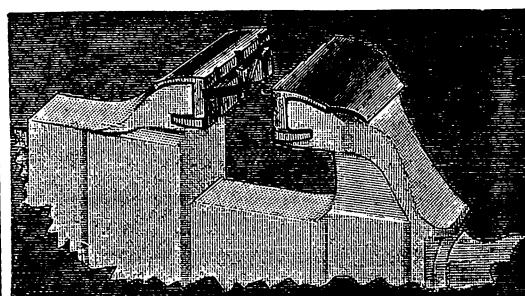
No. 1, per reel of 2000 ft., \$4.50 net.

No. 2, per reel of 2000 ft., \$4.75 net.

Pliers for cutting wire, 60 cents extra.

No. 1 for cases under 300 or 400 pounds, and No. 2 for all heavier cases.

Buffalo Specialty Mfg. Co., Sole Manufacturers, Buffalo N. Y. U. S. A.



BINGHAM PATENT VISE JAW CAP

Will Fit any Kind of Vise.

For protecting finished work. Will hold finished rods of any shape without injury.

3/8 inch, per pair, 40 cents.

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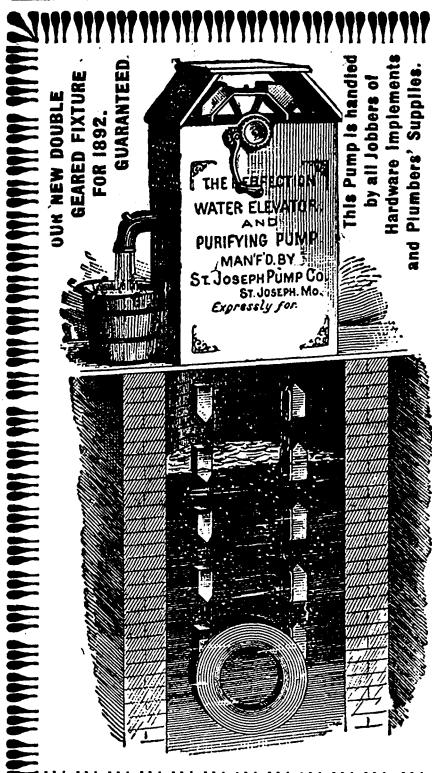
4 1/2 " " " " 60 "

PRENTISS VISE CO.,

44 Barclay St., New York.

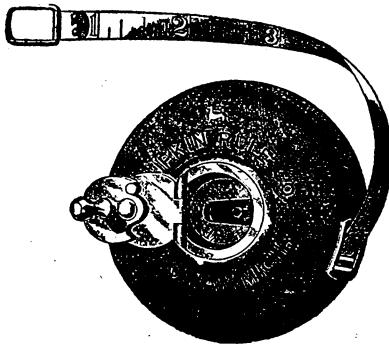


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SPECIALTIES & NOVELTIES, PATENTED ARTICLES,
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SEND FOR CATALOGUE. CORRESPONDENCE SOLICITED
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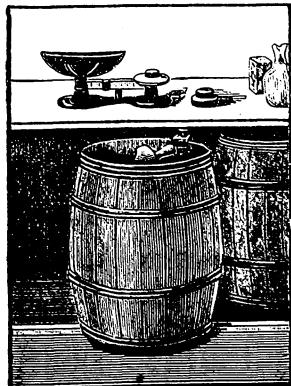


IF YOU SELL ONE OF OUR PUMPS TO A CUSTOMER IT WILL PROVE A WEDGE FOR INCREASED SALES IN OTHER LINES

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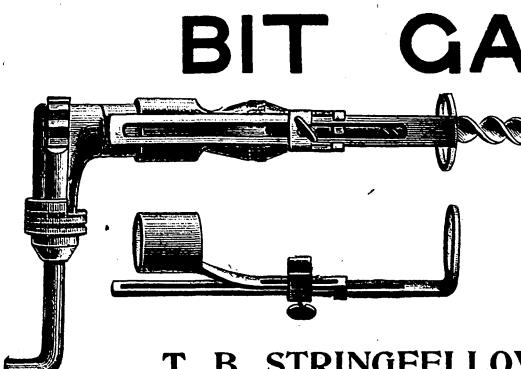
Wonder Somebody Didn't
THINK OF IT BEFORE!

The Perfection Barrel Swing.

A simple device, readily attached to any Pantry, Cupboard, Broad Shelf or under the counter in a Grocery or Hardware Store, for swinging a barrel to get at the contents easily. Price, \$1. All Hardware dealers will supply them.

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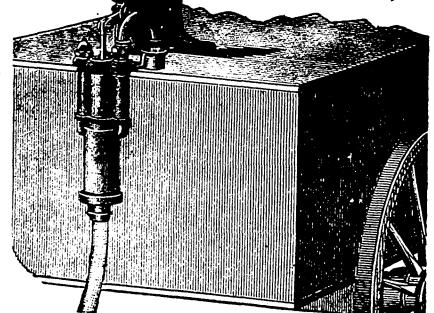
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Double Acting Force. Powerful, Efficient, and easy to attach to tank, has adjustable handle for convenience of operator.

We also manufacture COLUMBIA STEEL WIND MILLS, STEEL DERRICKS, BUCKEYES SPRAY PUMPS BUCKEYES FORCE & LIFT PUMPS, IRON FENCE, &c.

Write for circulars.
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A NEW CHAIN PUMP

KESSLER'S PATENT
Galvanized Iron Tubing

FOR CHAIN PUMP.
Is guaranteed to be
THE BEST.

IT is made of best quality Galvanized Iron, which will not rust nor accumulate filth.

IT only weighs one-half pound to the foot, wet or dry, while wood tubing saturated with water weighs six pounds or more per foot.

IT will last longer than wood tubing.

IT will not freeze in any climate.

IT can be attached to any make of curb.

We also manufacture a Galvanized (all) Iron Curb. Address

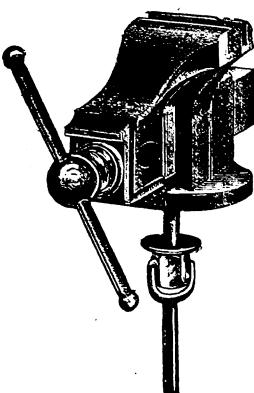
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HOLLANDS'
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Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.

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IN THE MODERN CROSS-CUT SAW.

- { 1.—Teeth of uniform thickness.
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For 10 YEARS the Simonds Crescent-ground Cross-cut Saw (the only Saw on the market possessing these **ESSENTIALS**) has stood out prominently in contrast with all other makes of cross-cut saws. It has been the **CRESCEENT-GROUND** against the **FIELD-MODERN IDEAS** against **ANCIENT METHODS**.

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NEW ADJUSTABLE BENCH LEVEL.

WITH GROUND AND GRADUATED VIAL.

4-6 and 8 inch.

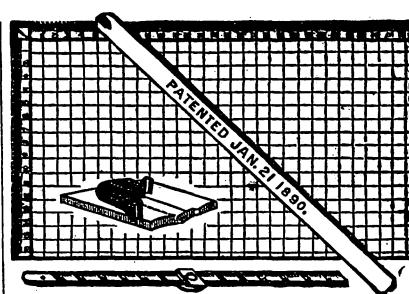


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Cuts any Fraction of an inch by Eighths.

Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

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The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

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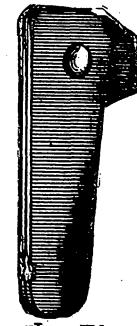
Spring Keys.



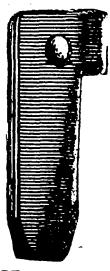
Spring Cotters.



Flat Spring Keys.

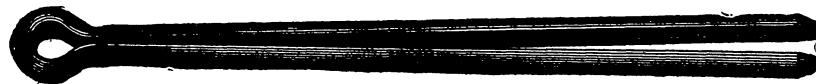


Flat Riveted Keys.



Cellar Box Cotters.

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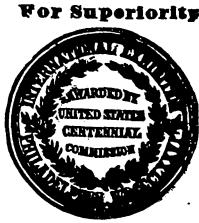
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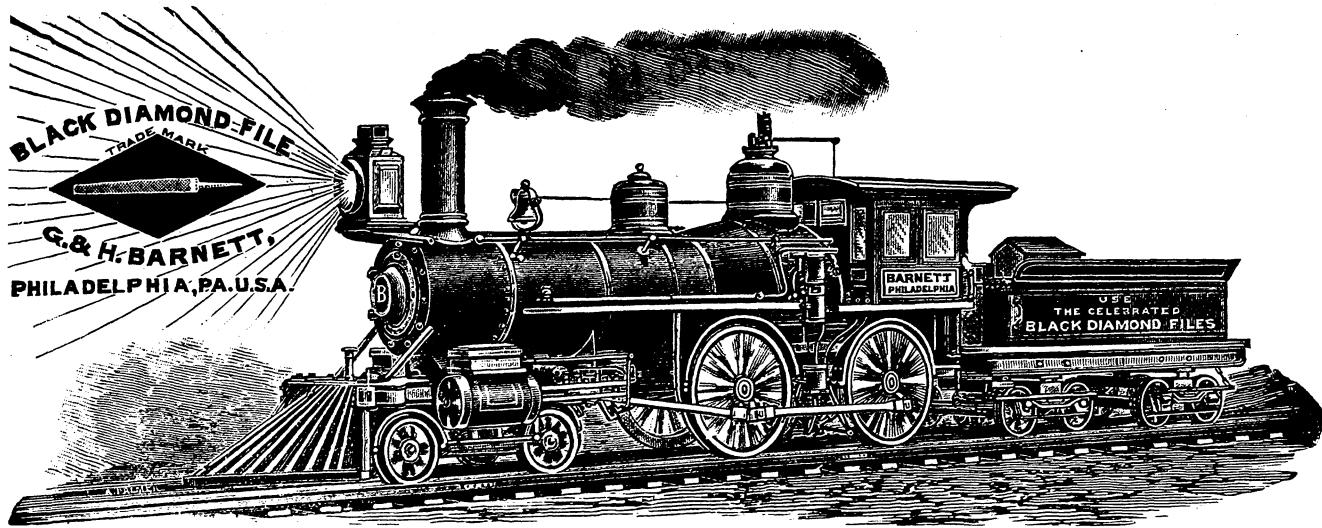
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QUOTE.

TOOTH.
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TOOTH.

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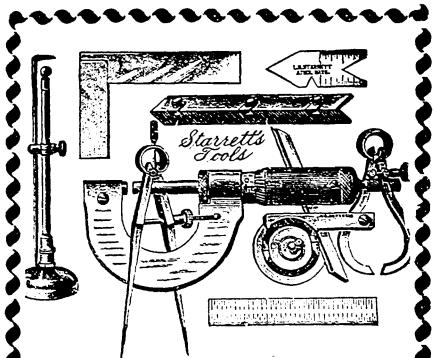
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THE BLADE AND STRAPS
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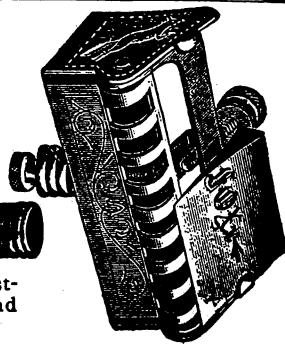
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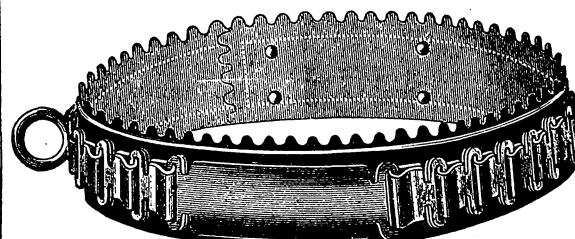
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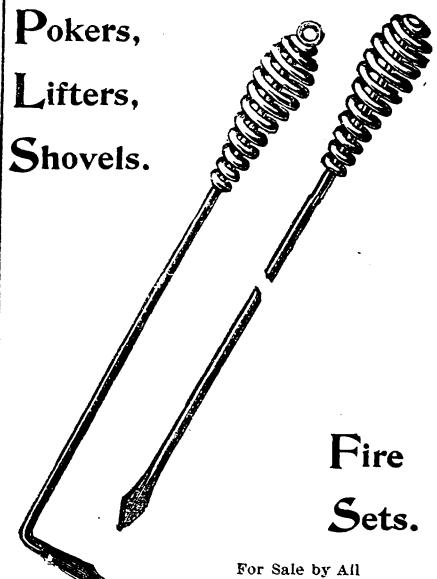
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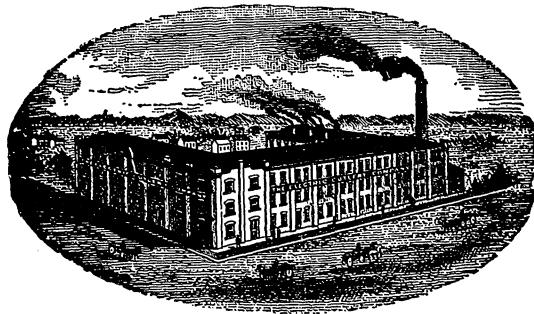
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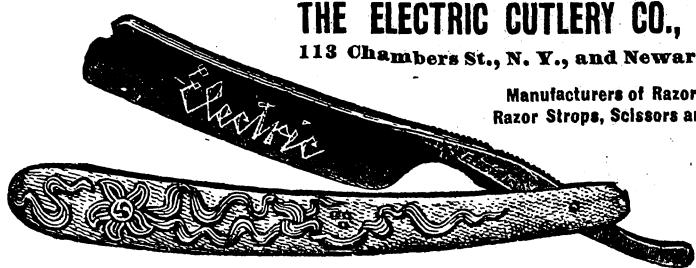
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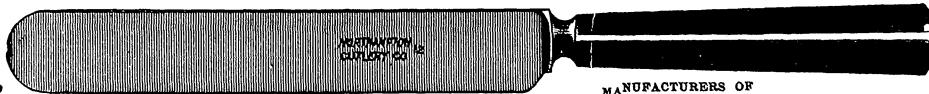
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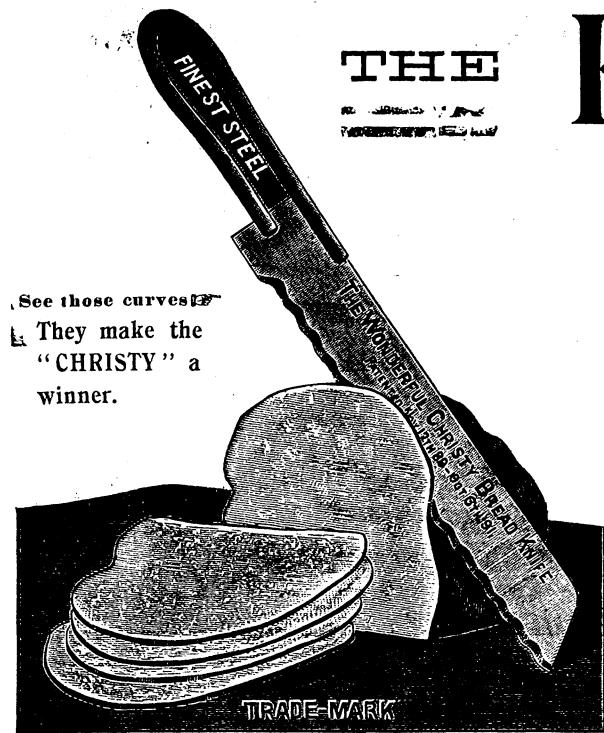
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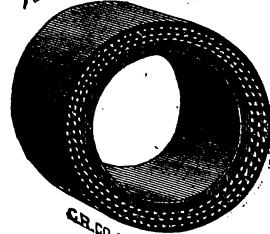
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Who has not lost time, patience, money, by attempting settlement for such goods?

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THE REMEDY is in buying our

PATENT SEAMLESS-TUBE HOSE,

made by machinery, the tube run like lead pipe, through a die. There is no lapped tube, no seam, no cracks, no defects; water cannot get through to rot the duck and cause the hose to burst.

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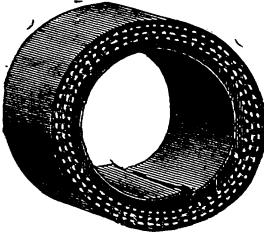
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alone during the past year,
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Order a Sample Bale of our Seamless-Tube Hose—Best in the World, costs no more than ordinary lapped-seam hose. The different colors, Red, White, Black, Green and Yellow, make a fine window or sidewalk attraction.

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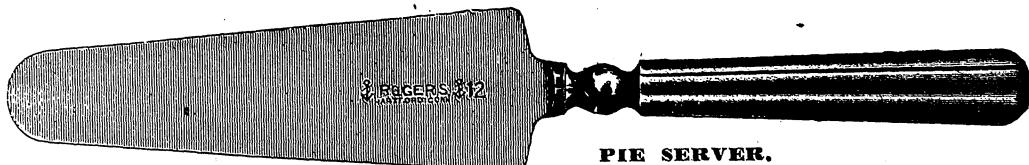
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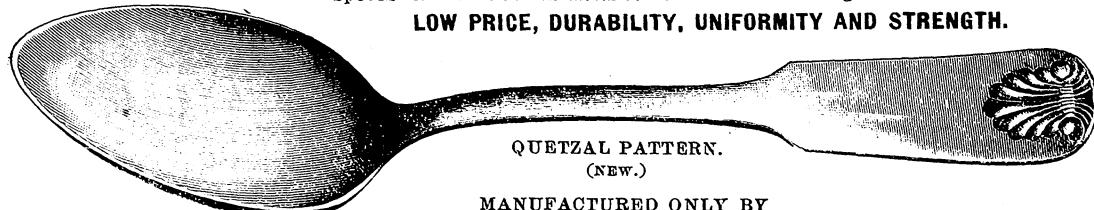
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has no plating to
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of some of our esteemed contemporaries revised some of their old lantern speeches so as to say that the Ohio Lantern Co. were the Jonahs who had to finally be heaved from the ship of the late lamented Lantern Association. Some went so far as to say we broke it up. Whew! Had no idea we were big enough to resist so powerful a nose coming violently against our loosely folded hand.

Be this as it may, we hope to be allowed to assert that we cultivate a forgiving spirit, and cheerfully turn our attention to everyday matters of commerce in which we are all just now much interested; for instance, a new price-list to suit changed conditions of trade. To any who may take an interest in such trivial matters we will gladly mail it with the assurance that it will prove to be very diverting wherever trade is backward-like "The surprise is a Great Lantern."

OHIO LANTERN CO.,

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CIRCULAR,
BUTCHER,BAND,
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SAWS

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FIG. 3. Showing Davis
cork-screw and fulcrum
in position to pull cork.DETROIT CORK-SCREW CO.,
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The Davis Knife and Cork-Screw,
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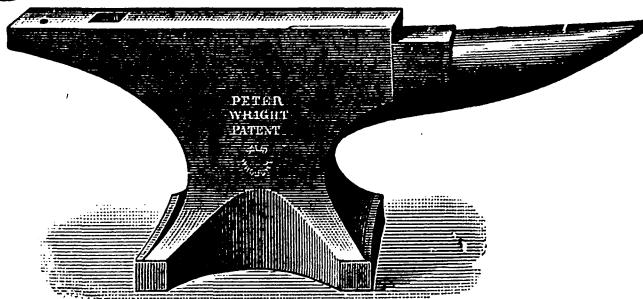
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PETER WRIGHT'S
SOLID WROUGHT
ANVIL
Made of Best Scrap Iron!
THE BICK FACE AND END ALL
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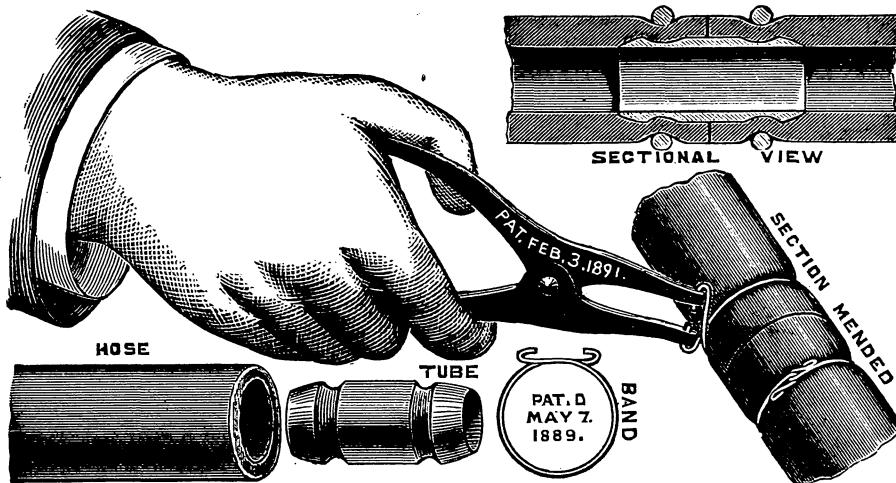
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Put up in Boxes for Family Use.



Each Box Contains 1 Pair Pliers, 6 Tubes, 20 Bands.

Hose can be mended or Couplings fastened on

**CHEAPER,
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Screw menders tear the rubber lining from the hose. OURS will not. If you wish to handle a good thing with a good profit write for circular and prices.

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The cut represents the exact size of 6/0.

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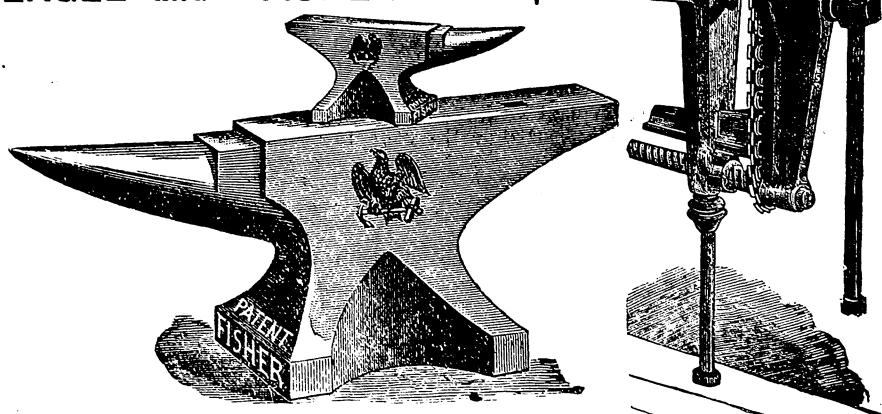
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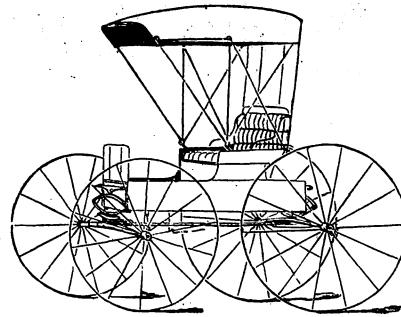
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MORE THAN 200 DIFFERENT PATTERNS.

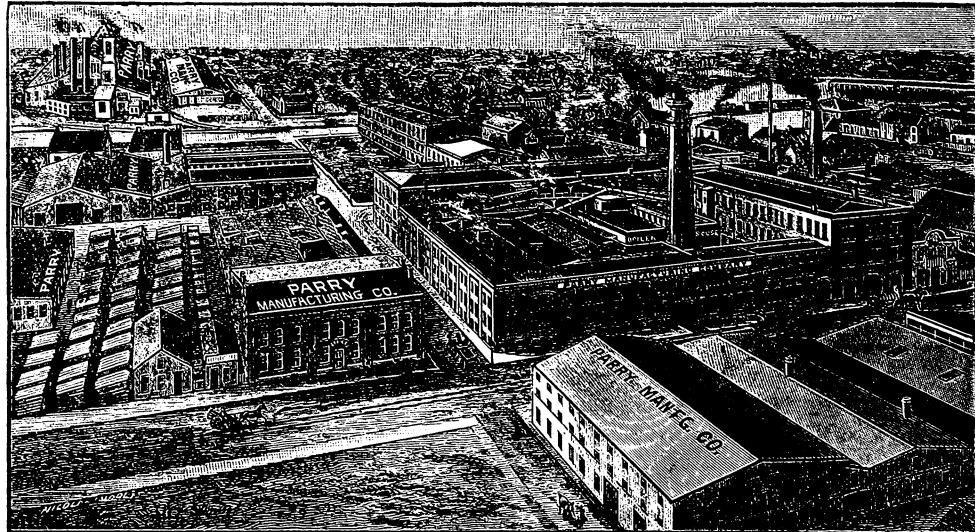
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FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

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and Round
Boilers.**

Pints.	Plain	Tinned.	Third or En'd.
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1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56

Quarts.	Plain	Tinned.	Third or En'd.
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21

Gallons.	Plain	Tinned.	Third or En'd.
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by $\frac{1}{4}$ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than $3\frac{1}{2} \times 6$ inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Wrenches. Standard List.

Inches.	6	8	10	12	15	18	21
Black...	\$9.00	\$10.00	\$12.00	\$14.00	\$24.00	\$30.00	\$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

Some merchants use this pamphlet for reference, checking off incomes, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out

and inserted in price books, and can be used in connection with any of The Iron Age Hardware Price Books.

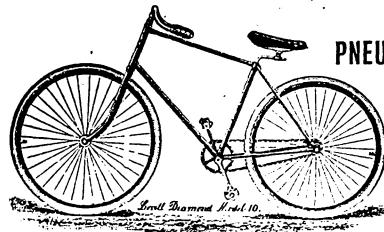
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The bearings are turned out of solid bar steel, and all material and workmanship are first class. Made in the same manner, of the same stock, with the same care as the large wheels. Good juvenile wheels are scarce, and ours are going rapidly.

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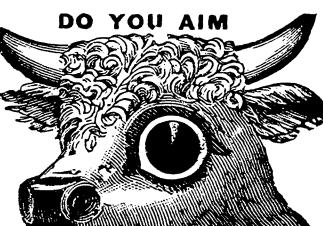
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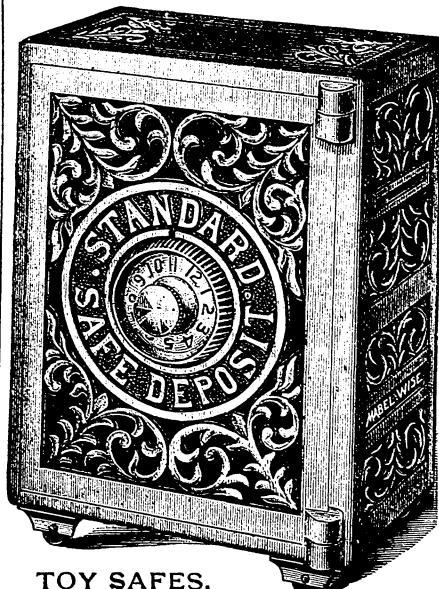
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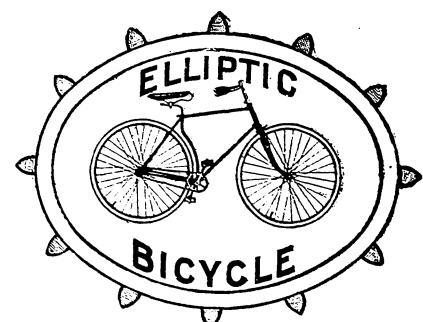
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1 " standing start, 2:04 3-5	1:56 3-5	

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— ALSO DIRECT IMPORTERS OF ALL KINDS —

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This GUN has rebounding locks and the barrels can be taken off and put on again without cocking the arm, and when cocked the hammers may be let down gradually, and without the full force of the blow. It is simple in construction, having very many less pieces than any other hammerless gun.

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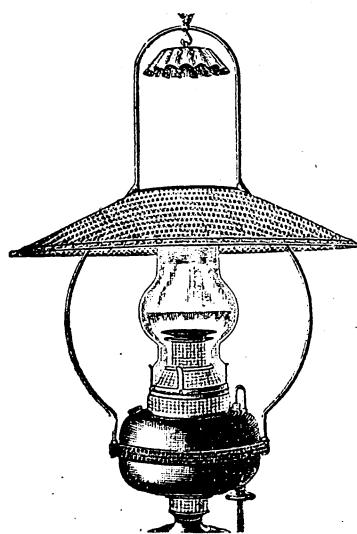
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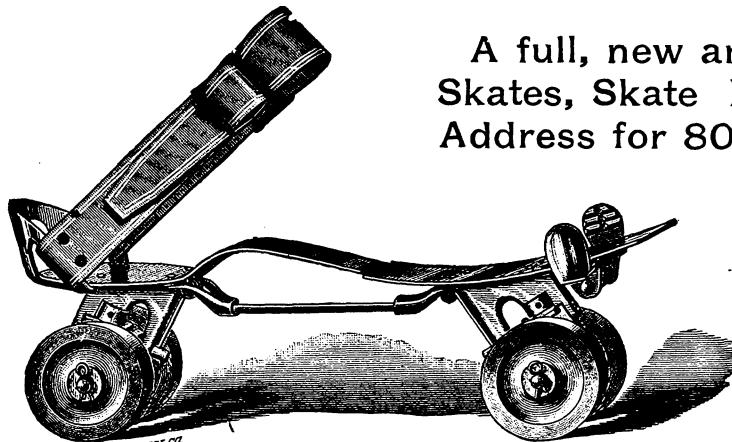
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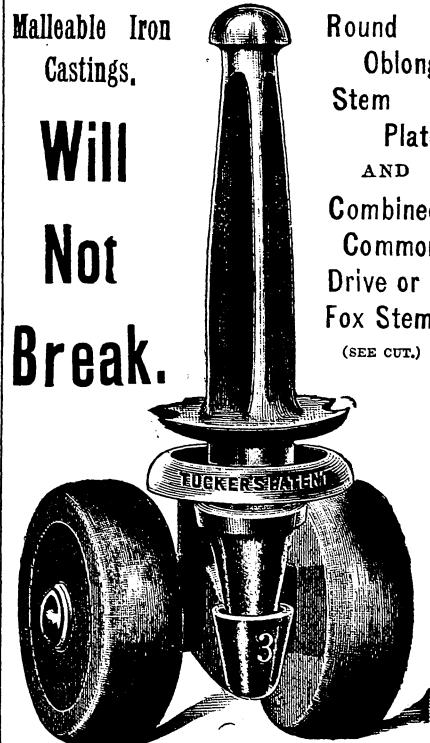
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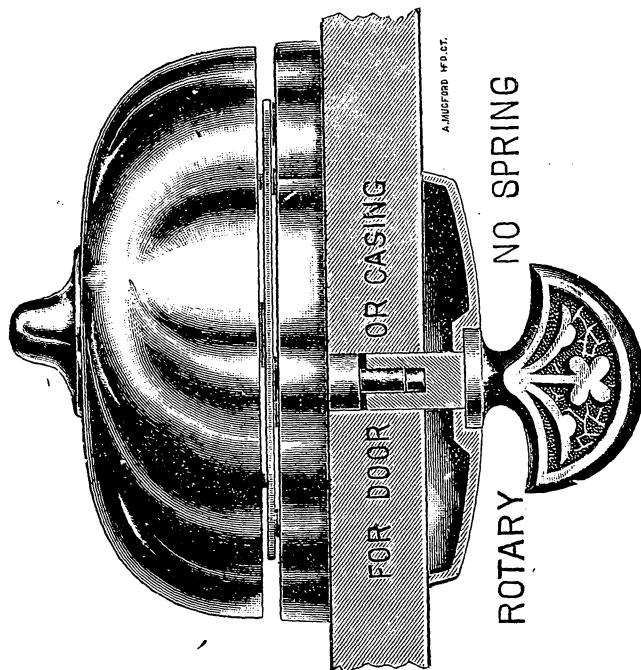
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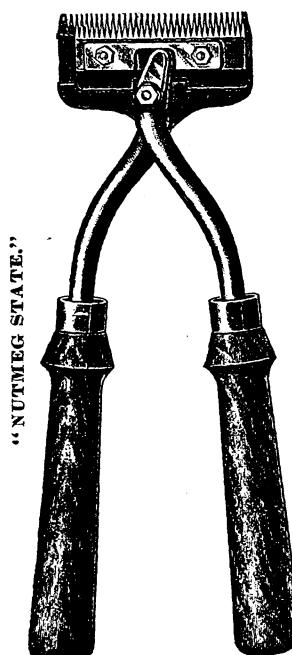
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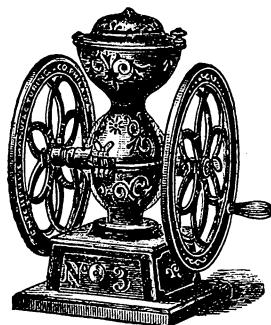
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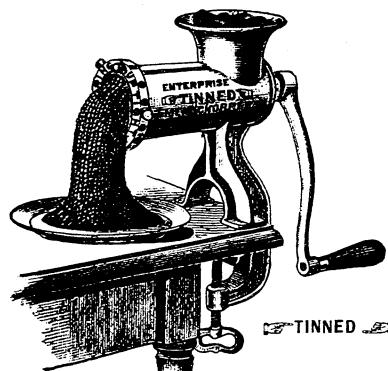
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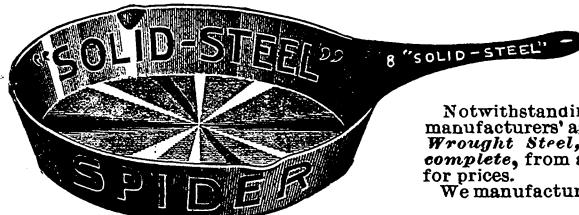
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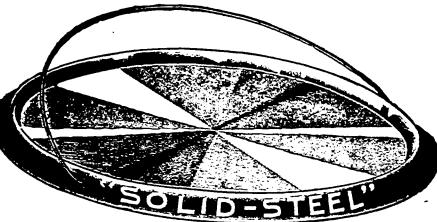


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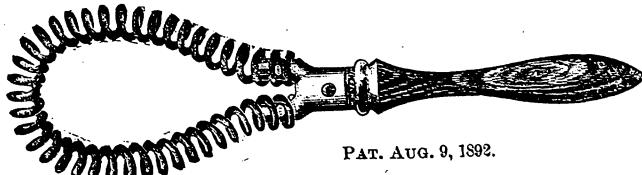


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COOKERS, COFFEE POTS AND
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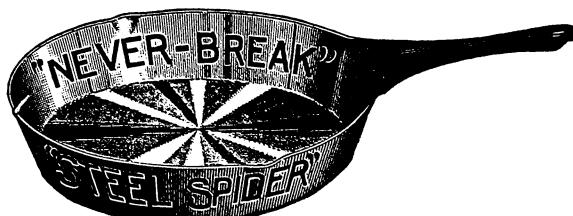
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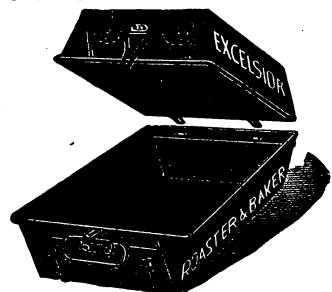
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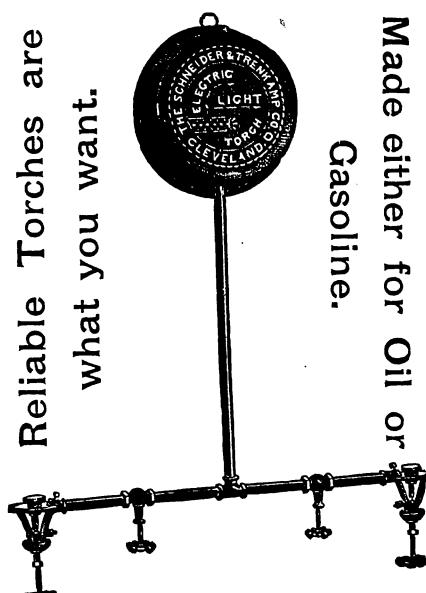
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FOR lighting manufacturing establish-
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brilliant, steady light, and by cheape
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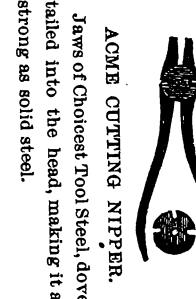
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Made with cutters of best steel.



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"ISN'T IT A DAISY?"

"WHAT?"

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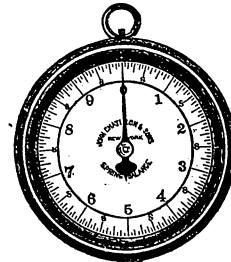
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THEN SEND FOR IT.

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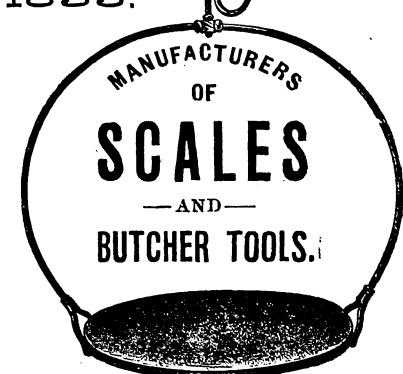
**John Chatillon
& Sons,**

85, 87, 89, 91, 93 CLIFF ST., NEW YORK.

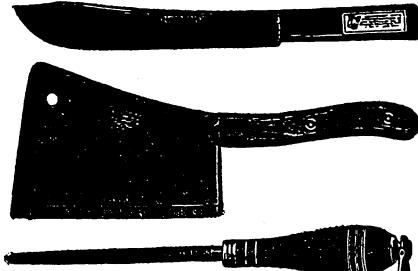


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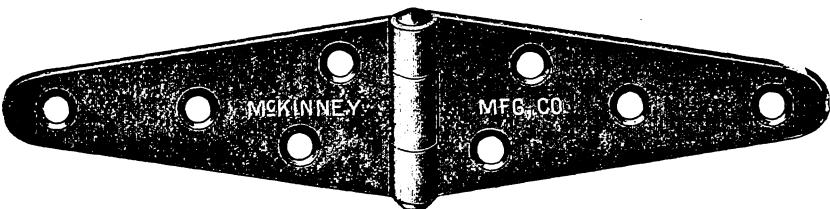
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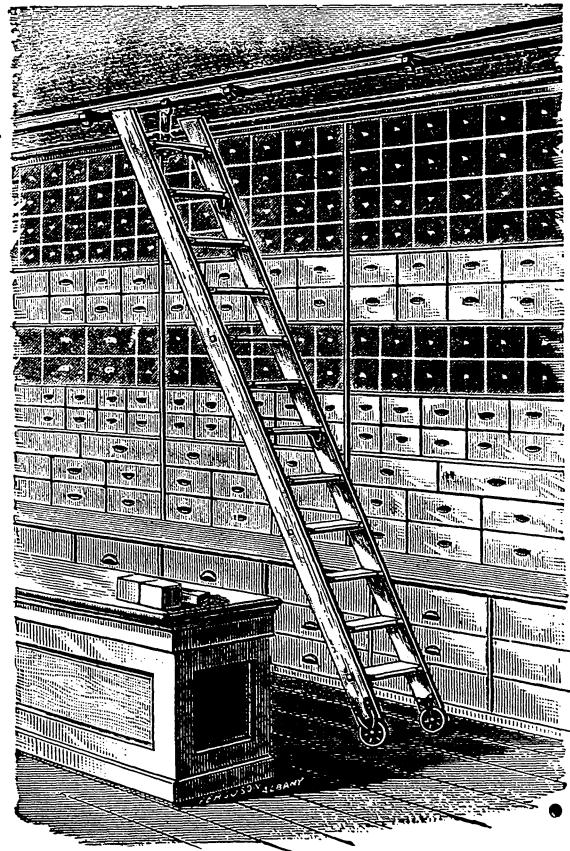


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THE "NOISELESS" STORE LADDER.

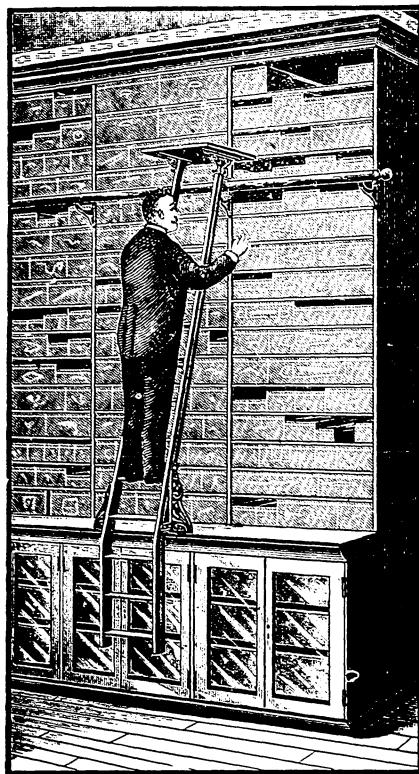


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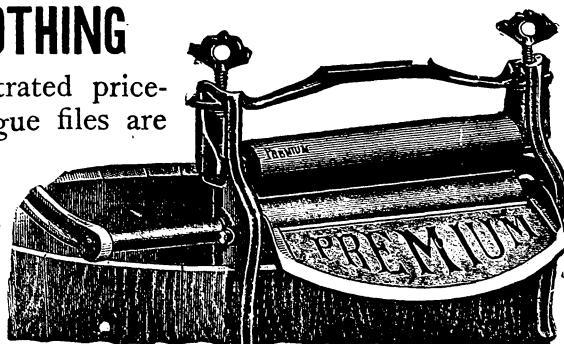
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The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made. Ladders are not Suspended, but Supported from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit. Send for illustrated catalogue and prices. See this space next week for other styles.

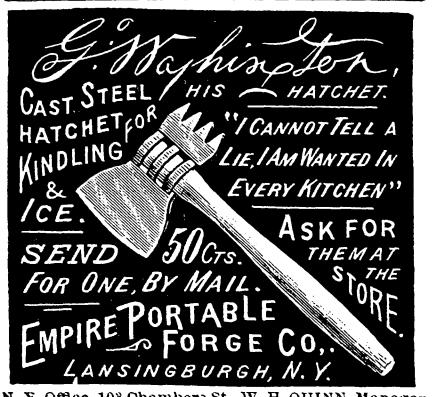
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IT COSTS NOTHING

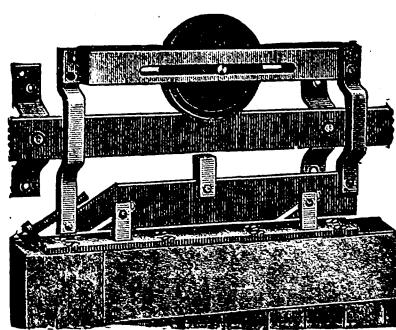
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The Hanger is Anti-Friction.
More nearly Noiseless than any other.
Ease of adjustment.

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No cutting of doors.
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Simplicity in all its parts.
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Manufactured by

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That possibly this lock might be a good thing, after all.
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THE CRAIG LOCKS HARDWARE MEN

Can Convince
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That they are good honest locks
worthy of confidence.

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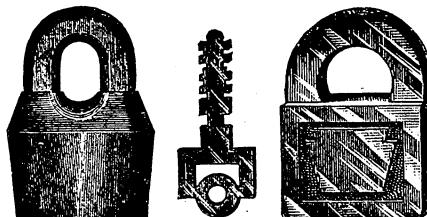
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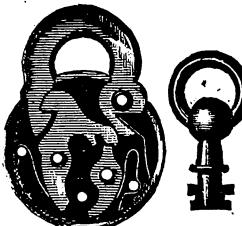
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Sizes; $\frac{1}{4}$ inch to $2\frac{1}{2}$ inches; of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{2}$ and $\frac{3}{8}$ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world. Adopted by the United States Treasury for bonded warehouses.



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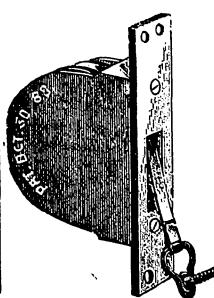
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CAN RECOMMEND THE

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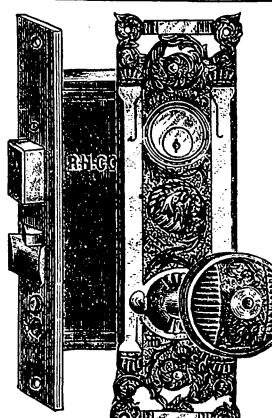
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Write for Prices.



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Our **"Columbian" Design** —

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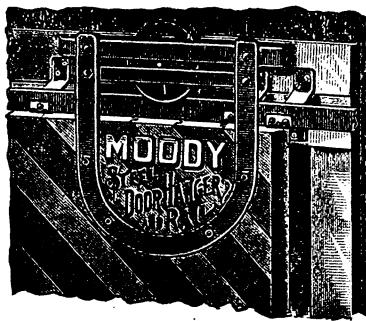
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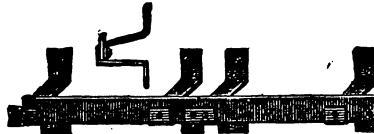
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VICTOR MFG. CO., Newburyport, Mass
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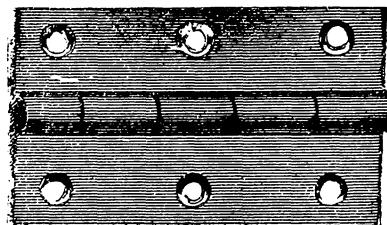


Showing one-half set of hangers attached to door.



HANGERS.

	Per Doz. prs.
No. 5, to run 6 feet, 3½ in. wheel,	\$10.00
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RAIL, per foot.....	6½ cents



Cast Brass Butt Hinges

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SOLID BRAIDED SASH CORDS, &c.

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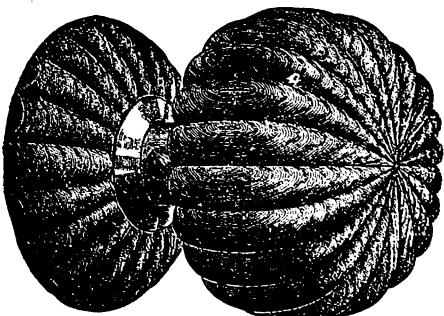


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"Champion" 6-Lever
"LEADS THEM ALL."**

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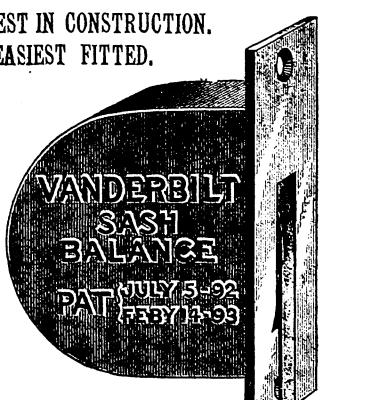
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DOOR SPRINGS AND CHECKS
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NEW GOODS. NEW PRICES.
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Cheapest and Best
Balance Made.

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NONPAREIL
Ratchet Wrenches.
Made of best forged Tool Steel; are
easily and readily adjusted and controlled. Can be made reversible in-
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The Set of Combination Tools No. 1
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"CONROY"
Refrigerator Door Fasteners

Have rapidly supplanted all others.

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The Best and most Practical
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when in position are out of
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screws are used in putting it
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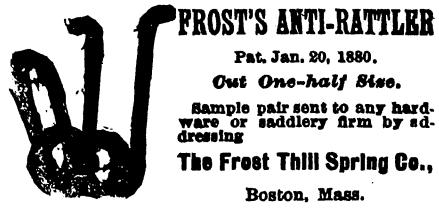
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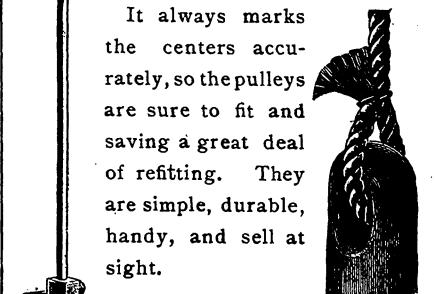


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Will mark in ten minutes what would take five hours to do the old way, saving the price of it the first time used.

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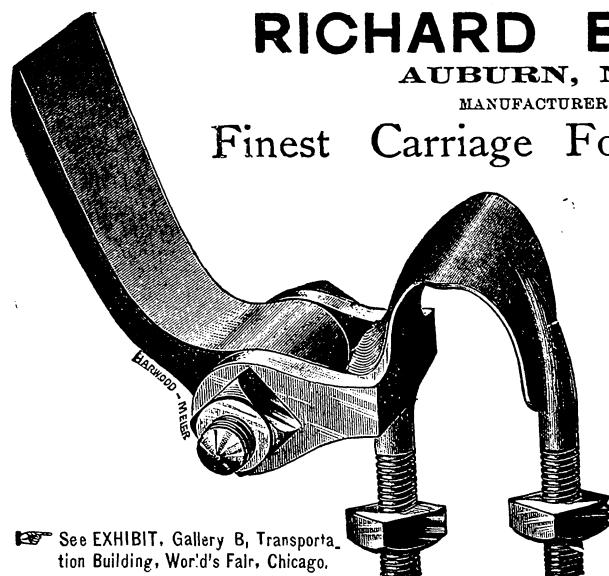
J. W. Skelly & Son, - BRISTOL, CT.

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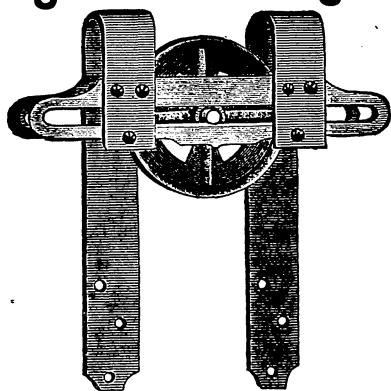
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Always Clean. Indestructible.
No Rivets to Wear Loose.
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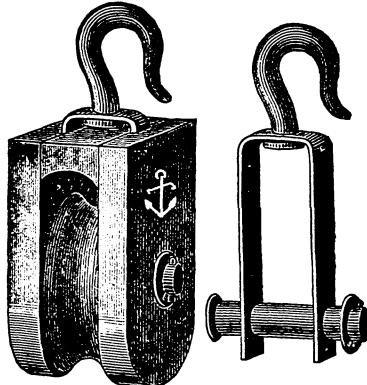
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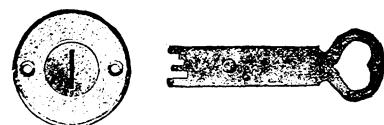
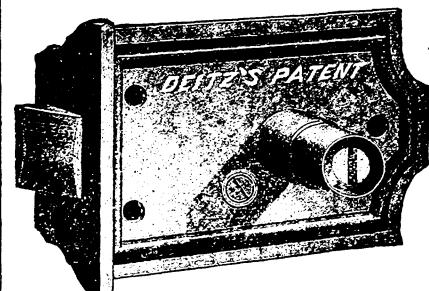
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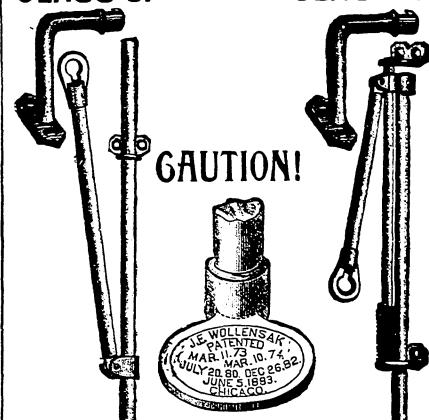
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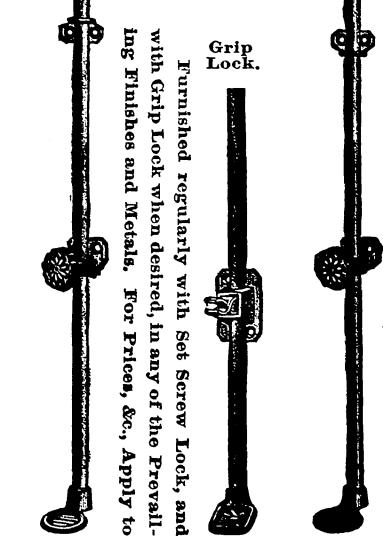
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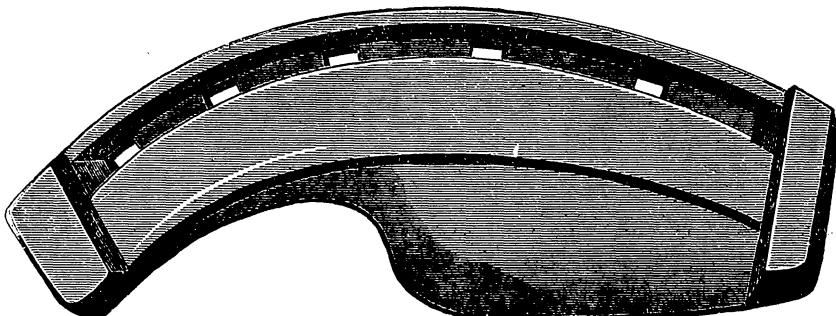
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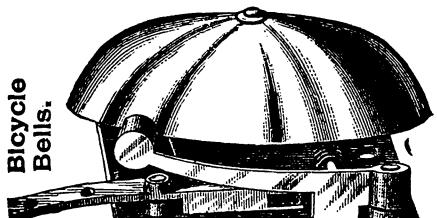
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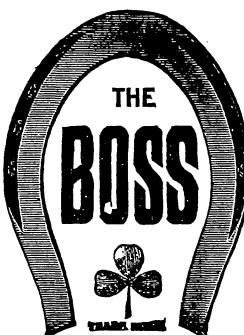
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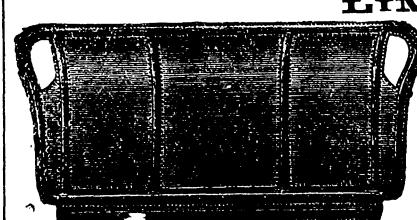
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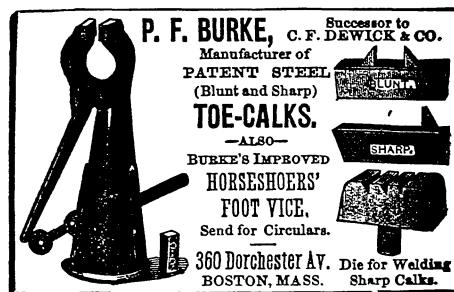
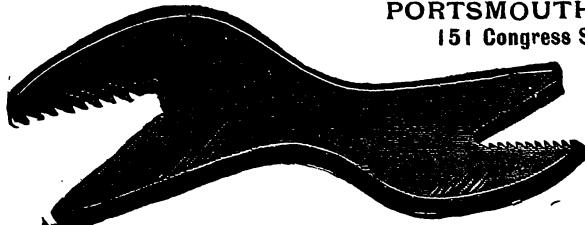
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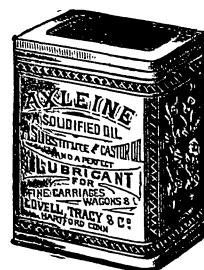
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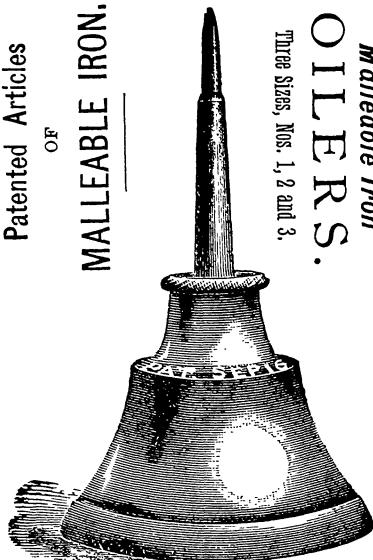
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The Sizes, Nos. 1, 2 and 3.
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New Improved
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This Wrench can be Furnished with Long
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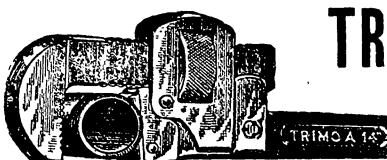
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Case-Hardened Throughout.

Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal. For Circulars and Price-List, address

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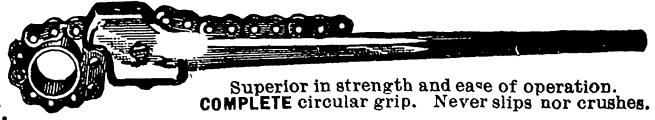
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Forged Steel.

All parts Interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

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CHAIN
PIPE
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Superior in strength and ease of operation.
COMPLETE circular grip. Never slips nor crushes.

Can be used with one hand and in closer quarters than any other Basin Wrench. Parts interchangeable.



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Hammer's Adjustable Clamps.
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New Pattern Heavy Screw Clamps.
Strongest in the market.

For Sale by all the Principal Hardware Dealers.
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MALEABLE IRON CASTINGS of superior quality, and Hardware Specialties in Malleable Iron, made to order.

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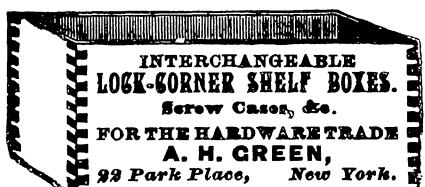
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INTERCHANGEABLE
LOCK-CORNER SHELF BOXES.
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BERGER'S PATENT TRUCKS.
The Handiest, Cheapest and
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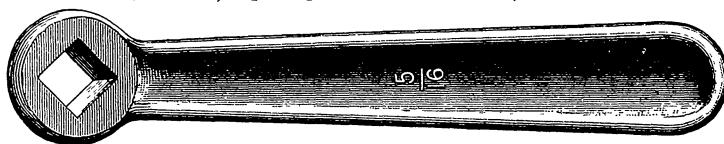
Highest testimonials from those in use.
Wholesale agents wanted in every city. Correspondence from Truck Manufacturers solicited. Circulars, price-lists and full particulars furnished.

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DROP-FORGED STEEL BOX WRENCHES.

Ten Sizes; Openings from $\frac{1}{4}$ in. to 1 in., inclusive.



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Engineers' and Set Screw Wrenches, Lathe-dogs Brock's Patent Drop-forged Chain Pipe Wrench, Collars, Thumb Screws, Keys, Special Drop-Forgings.

DOUBLE END WRENCHES



For Standard Hexagon Nuts
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in Lengths from 6 to 24 inches

Taking Nuts for $\frac{1}{4}$ up to and including Nuts for 1 $\frac{3}{4}$ inch bolts

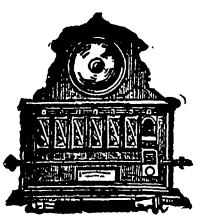
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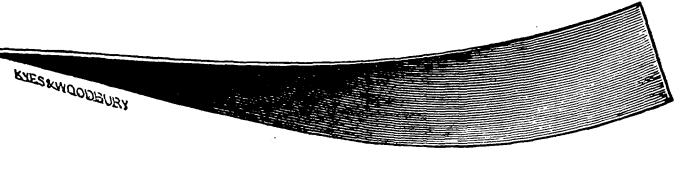
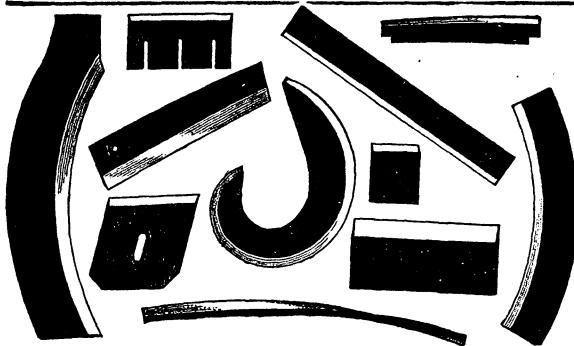
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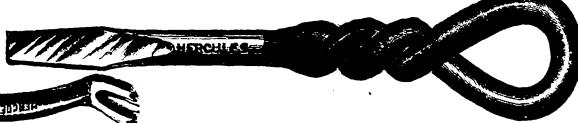
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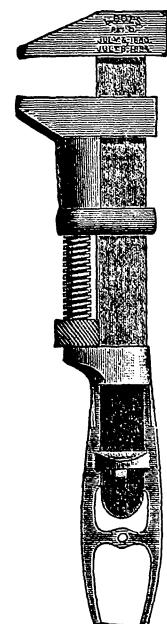


This Hercules Screw Driver and Tack Claw (Patented). The blade is well polished, carefully tempered, and every screw driver is subjected to a severe test and warranted. Handles Japanned with the best quality baking Japan.

The Strongest and Most Durable Wrench and Screw Driver Made.

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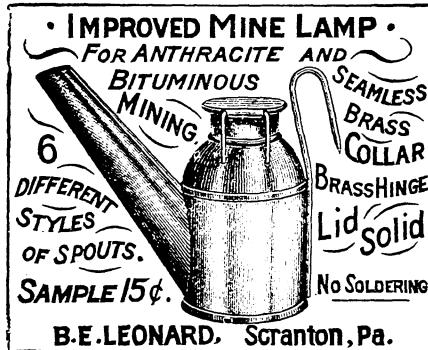
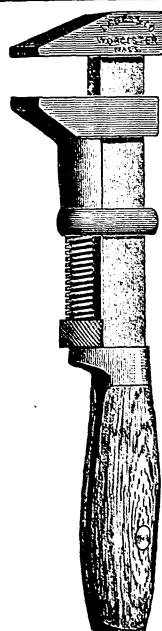
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KNIFE HANDLE
PATENTScrew
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March 31, 1874.Patented July
6, 1880.Patented July
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Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar keyed into position.

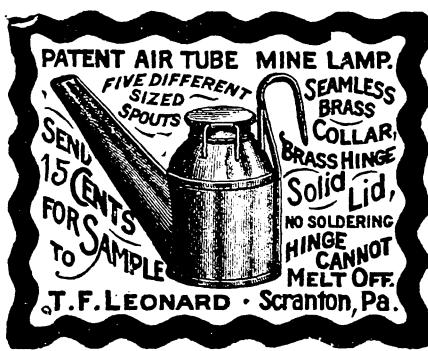
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The BEST MADE and STRONGEST WRENCH in the MARKET

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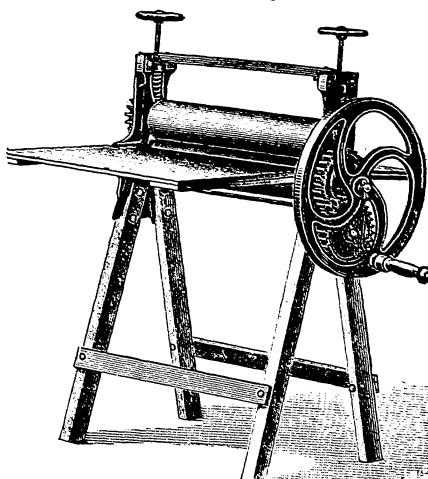


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The Family Mangle.

WARRANTED TO DO
Better Work than Hand-work.SAVES all the fuel.
two-thirds the work.
Keeps the linen whiter.

We Guarantee Every Machine.



Send for descriptive circular of

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Agents Wanted.

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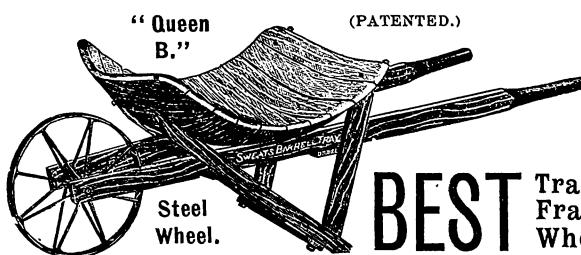
Is synonymous with the greatest wheelbarrow works in the world.

Shrewd buyers recognizing this fact purchase where the greatest and most complete line is made. Do you?

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"BARREL TRAY" WHEEL BARROWS.



OUR tray is made from **Staves** strung on **Iron Rods**. Will not split or break. The best seller and most durable Barrow in the market.

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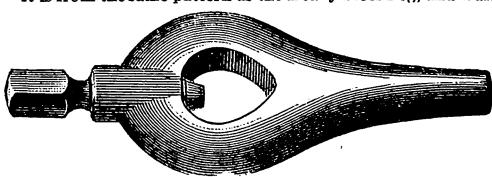
BEST **Tray** **Frame** **SWEATT MFG. CO.**, Minneapolis, Minn.
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MAGIC OSCILLATING CURRY COMB

AGENTS WANTED.
SAMPLE POSTPAID 30 CTS.
WE OWN THE BOTTOM PATENTS ON SPRING COMBS.
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LE COUNT'S STRAIGHT TAIL DOG, WITH STEEL SCREWS.

U. S. Standard, and the points hardened. To be driven from a stud in the face plate. It is from the same pattern as the Heavy Steel Dog, and warranted, like that, not to break with any work.



No.	Inch.	Price.	No.	Inch.	Price.
1	¾	\$0 60	11	1 ¼	\$1 45
2	¾	70	12	3	1 60
3	1	70	13	¾	1 80
4	1 ¼	80	14	4	2 10
5	1 ¼	80	15	4 ¼	2 75
6	1 ¾	95	16	5	3 25
7	1 ¾	95	17	5 ¼	4 00
8	1 ¾	1 10	18	6	5 00
9	2	1 20	19	7	6 00
10	2 ¼	1 35	20	8	7 00

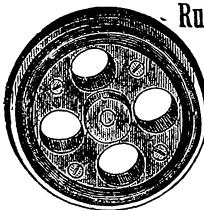
One set to 2 inch, \$7.50. Full set, \$44.10

This pattern will stand much more than a bent tail, and some prefer them on account of their direct action on the work.

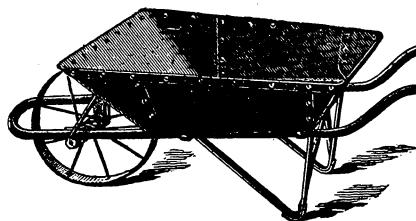
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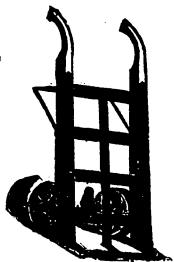
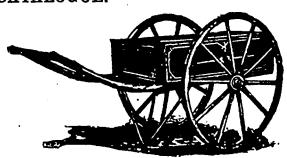
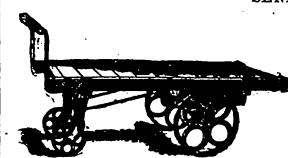
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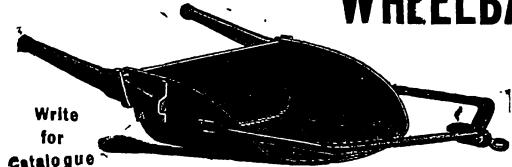
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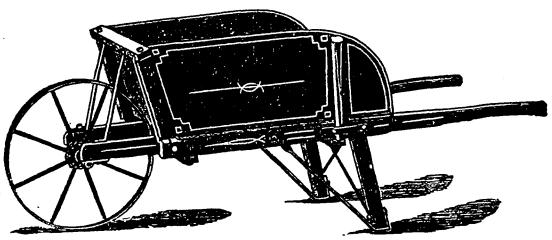
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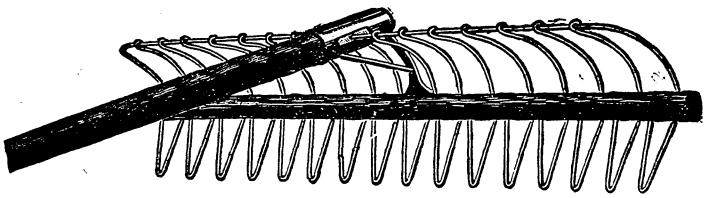
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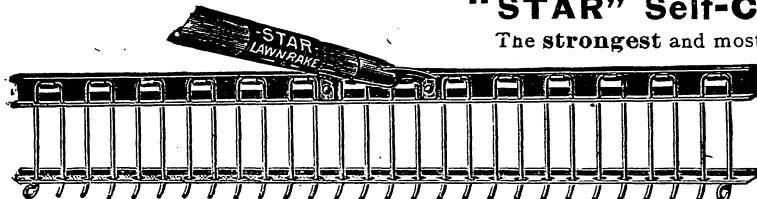
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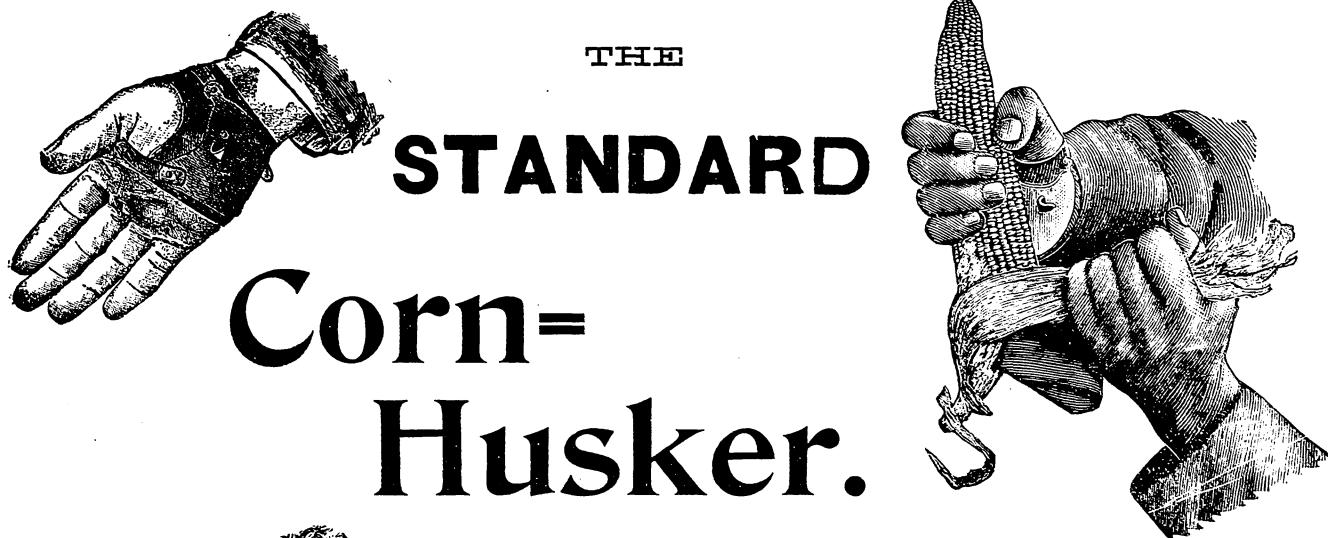
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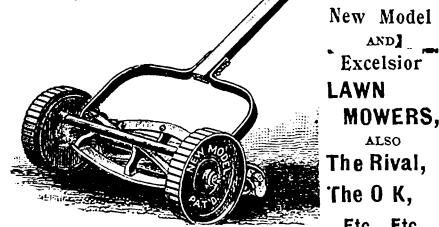
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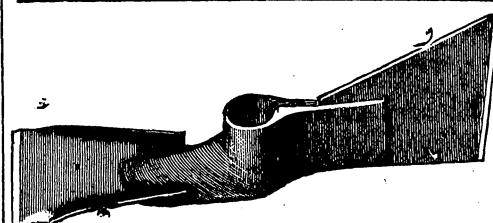
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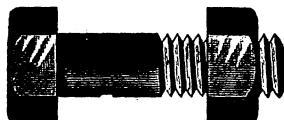
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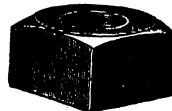
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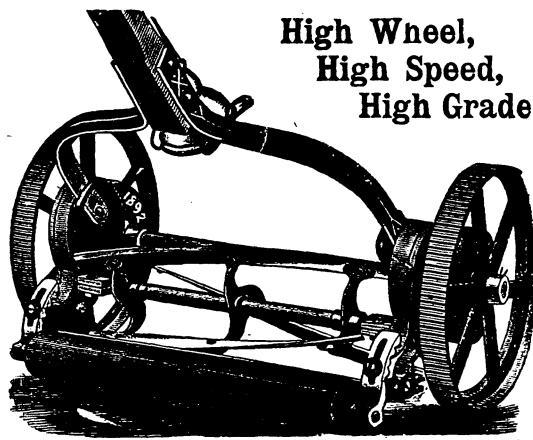
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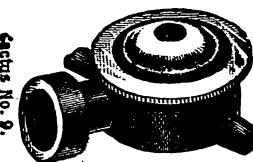
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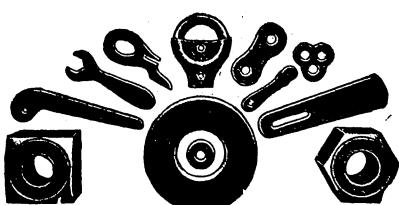
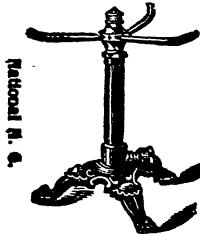


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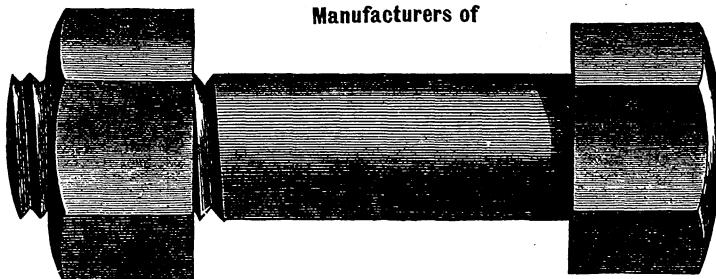
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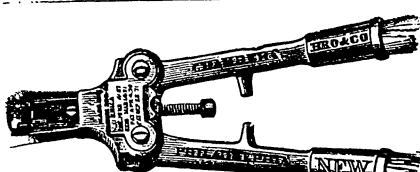
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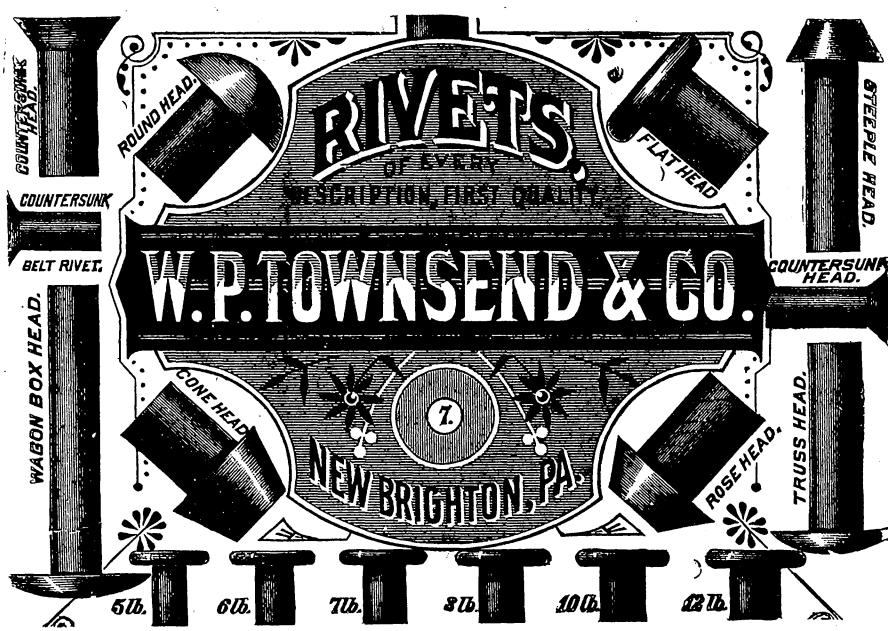
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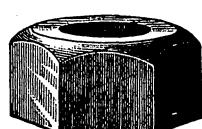
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Covert's Saddlery Works, Farmer, N. Y.

Eccles, Richard, Auburn, N. Y.

McKinney Dash & Hdw. Co., Ltd., Buffalo, N. Y.

Scranton Forging Co., Scranton, Pa.

Smith, H. D. & Co., Plantsville, Conn.

Wilcox & Howe Co., Birmingham, Conn.

Cartridge Reloading Tools.

Ideal Mfg. Co., New Haven, Conn.

Casters, Wheel, &c.

Clark, G. P., Windsor Locks, Conn.

Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Castings, Iron and Steel.

Ames Sword Co., Chicopee, Mass.

Arcade Malleable Iron Co., Worcester Mass.

Aschman Steel Casting Co., Thurlow, Pa.

Booth, The Lloyd, Co., Youngstown, O.

Burgess & Loxley, Buffalo, N. Y.

The Burr & Houston Co., Brooklyn, N. Y.

Cambria Steel Cambria Iron Co., Johnstown, Pa.

Cheney, S. & Son, Manlius, N. Y.

Chester Steel Casting Co., Phila.

Chrome Steel Works, Brooklyn, N. Y.

Ettie & Henger Mfg. Co., St. Louis, Mo.

Flagg, Stanley G. & Co., Phila.

Hammer & Co., Branford, Conn.

Herrick, J. A., 284 Pearl St., N. Y.

Johnson Foundry Co., Johnstown, Pa.

Johnson, L. G. & Co., Sputzen Duyvil.

Mahoning Fdry. & Mch. Co., Danville, Pa.

Northwest Malleable Iron Co., Milwaukee, Wis.

Palmer & De Mooy, Cleveland, O.

Passaic Art Casting Co., Passaic, N. J.

Penna. Diamond Drill & Mfg. Co., Moorestown, Pa.

Standard Casting Co., Thurlow, Pa.

Taylor Iron & Steel Co., High Bridge, O.

Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.

Trenton M. Iron Co., Trenton, N. J.

Union Mfg. Co., 103 Chambers St., N. Y.

West Coxsackie Iron Fdry., Coxsackie, N. Y.

Wetherill, Robt. & Co., Chester, Pa.

Wrenn, Whitehurst & Co., Norfolk, Va.

Chains.

Bradlee & Co., Philadelphia.

Bridgeport Chain Co., Bridgeport, Conn.

Link-Belt Engineering Co., Phila., Pa.

McKay, Jas. & Co., Pittsburgh, Pa.

Cherry Stoners.

Goodell Co., Antrim, N. H.

Chimneys.

Phila. Engineering Works, Phila., Pa.

Chisels, Manufacturers of.

Suck Bros., Millbury, Mass.

White, L. & J. Co., Buffalo, N. Y.

Chucks.

Cushman Chuck Co., Hartford, Conn.

Hoggan & Pettis Mfg. Co., New Haven, Conn.

Horton, E. & Sons Co., Windsor Locks, Conn.

Smith & Egge Mfg. Co., Bridgeport.

Skinner Chuck Co., New Britain, Conn.

Union Mfg. Co., 108 Chambers, N. Y.

Whitlock, W., 132d St. & Park Ave., N. Y.

Whitton, D. E. Mach. Co., New London, Conn.

Clamps.

Hammer & Co., Branford, Conn.

Le Count, C. W., So. Norwalk, Conn.

Clipping Machines.

Hotchkiss, E. S., Bridgeport, Conn.

McCoy, Jos. F. & Co., 26 Warren St.

Coral.

Barns, C. K. & Co., Philadelphia, Pa.

Drop Presses.

Bliss, E. W. & Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Eaton, Geo. H. & Co., Boston, Mass.
Miller & Peck Mfg. Co., New Haven, Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.

Storm Mfg. Co., Newark, N. J.
Dust Beaters.

Peabody & Parks, Troy, N. Y.

Dynamite.

New York Powder Co., 62 Liberty St., N. Y.
Dynamics.

C. & C. Electric Motor Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Erie, Pa.
Zucker & Levett Chemical Co., 14 Grand St., N. Y.

Edge Tools. Makers of.

Suck Bros., Millbury, Mass.
Butcher, W. & S., 135 Duane St., N. Y.
Buffalo Edge Tool Wks., Buffalo, N. Y.
Plumb, Fayette R., Philadelphia, Pa.
White, L. & J. Co., Buffalo, N. Y.

Egg Beaters.

North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.

Ostrander, W. R. & Co., 204 Fulton St., New York.
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.

Eddy Electric Mfg. Co., Windsor, Conn.

Electric Elevators.

Smith Hill Co., Quincy, Ill.

Electric Welding.

Thomson Electric Welding Co., Boston, Mass.

Electro-Platers.

Boardman, L. & Son, East Haddam, Conn.

Elevators. Makers of.

Link-Belt Engineering Co., Phila., Pa.
Moline Elevator Co., Moline, Ill.
Morse, Williams & Co., Phila., Pa.
Salem Dry & Mfg. Co., Salem, Mass.

Emery and Emery Wheels.

Bell, Geo. E., 36 John St., N. Y.
Grant Corundum Wheel Mfg. Co., Worcester, Mass.
Hampton Emery and Corundum Co., Chester, Mass.
Michigan Emery Wheel Co., Detroit, Mich.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Emery Wheel Mfg. Co., Bridgeport, Conn.

Enamels.

Nubian Iron Enamel Co., Cragin, Ill.

Engineers and Contractors.

Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Carton, Henry J., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R. Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa.
Pittsburgh Iron & Steel Engineers Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburg, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Wilkie, Bothwell & Co., Ltd., Pittsburg, Pa.
Wetherow, Jas. P. Co., Pittsburgh, Pa.

Engines, Gas.

Ott's Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemeyer Bldg., N. Y.

Engines, Steam. Makers of.

Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Harrisburg Fdy. & Machine Works, Harrisburg, Pa.
Norwalk Iron Works Co., So. Norwalk, Conn.
Phoenix Iron Wks. Co., Meadville, Pa.
Shipman Engine Co., Boston, Mass.
Southwark Foundry and Machine Co., Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Thimbles.

Sweeter, W. A., Brockton, Mass.

Expansion Bolts.

Boone, W. C. & Son, Brooklyn, N. Y.
Church, Isaac, Toledo, O.

Faucets, Self-Measuring.

Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden. Makers of.

Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.

Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harr son Safety Boiler Wks., Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Phila., Pa.
Whitlock Coll Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.

Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
DeKalb Fence Co., DeKalb, Ill.

Gilbert & Bennett Mfg. Co., 42 Cliff St., Hartman Mfg. Co., Beaver Falls, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files, Importers of.

Moss, F. W., 80 John, N. Y.

Files and Rafts, Manufacturers of.

Banker & White, Troy, N. Y.
Bennett, G. & H., 41 & 43 Richmond Phila.

Butcher, W. & S., 135 Duane St., N. Y.
McGaffey File Co., Philadelphia.

Nicholson File Co., Providence, R. I.

Fire Brick, Makers of.

Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Trellescher R. & Sons, 407 E. Houston, St.

McLeod & Henry Co., Troy, N. Y.

Ostrander Fire Brick Co., Troy, N. Y.

Presbrey Stove Lining Co., Taunton, Mass.

Valentine, M. L. & Bro., Woodbridge.

Fire Sets.

Troy Nickel Works, Troy, N. Y.

Fishing Tackle.

Dane, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.

Baeder, Adamson & Co., Phila., Pa.

Flue Cleaners.

Mackay, Jas. T. St. Louis, Mo.

Fly Fans.

Matthai, Ingram & Co., Baltimore, Md.

Fodder Cutters.

Silver Mfg. Co., Salem, O.

Forges, Portable, &c.

Bradley & Co., Syracuse, N. Y.

Bullock Bellows Co., Cleveland, O.

Buffalo Forge Co., Buffalo, N. Y.

Champion Blower & Forge Co., Lancaster, Pa.

Empire Portable Forge Co., Lansingburg, N. Y.

Food Mfg. Co., Springfield, Ohio.

Sturtevant, E. F. Co., Boston, Mass.

Forgings, Iron and Steel.

Bethlehem Iron Co., S. Bethlehem, Pa.

Cambria Steel—Cambria Iron Co., Johnstown, Pa.

Scranton Forging Co., Scranton, Pa.

Foundry Facings.

Chicago Fdy. Supply Co., Chicago, Ill.

MacKellar Foundry Facing & Supply Co., Quincy, Ill.

Paxson, J. W. & Co., Phila., Pa.

S. Obermayer Co., Cincinnati, O.

Smith, J. D. Fdy. Supply Co., Cinn., O.

Whithead Bros. Co., 517 W. 15th St.,

Foundry Riddles.

Este, W. S., 65 Fulton, N. Y.

Foundry Supplies.

Chicago Fdy. Supply Co., Chicago, Ill.

Colligan, Victor, Detroit, Mich.

MacKellar Fdy. Facing & Supply Co., Quincy, Ill.

S. Obermayer Co., Cincinnati, O.

Parson, J. W. & Co., Philadelphia.

Smith, J. D. Fdy. Supply Co., Cinn., O.

Whithead Bros. Co., 517 W. 15th St.,

Friction Clutches.

Keystone Clutch & Mch. Wks., Phila., Pa.

Moore & White Co., Philadelphia, Pa.

Fruit Presses.

Enterprise Mfg. Co., Philadelphia, Pa.

Fuel Burners.

Collins, W. S., 45 Drexel Bldg., N. Y.

Furnaces, Foundry.

Byram & Co., Detroit, Mich.

Garden Tools.

Noyes, B. B. & Co., Greenfield, Mass.

Gas Producers.

Wood, R. D. & Co., Philadelphia, Pa.

Gas & Steam Fitters' Supplies.

Pancoast & Maule, Phila., Pa.

Gauge, Rolling Mill.

Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.

T. E. Whiton Mach. Co., New London, Conn.

Gears.

Boston Gear Works Boston Mass.

New Process Raw Hide Co., Syracuse, N. Y.

Poole, Robt. & Son Co., Baltimore, Md.

Union Fdy. & Mch. Co., Pittsburgh, Pa.

Glass Boards.

Canton Saw Co., Canton, O.

Glass Tubes.

Ashcroft Mfg. Co., 111 Liberty St., N. Y.

Glass Cutters.

Monco, S. G., Bristol, Conn.

Globe.

Brown, E. T., Detroit, Mich.

Champion Iron Co., Kenton, O.

Clinton Wire Cloth Co., Clinton, Mass.

DeKalb Fence Co., DeKalb, Ill.

Gutters, Self-Measuring.

Lane Bros., Poughkeepsie, N. Y.

Gaskets, Wooden. Makers of.

Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.

John Sommer's Son, Newark, N. J.

Feed-Water Heaters.

Davis, I. B. & Son, Hartford, Conn.

Goubert Mfg. Co., 32 Cortlandt St., N. Y.

Harr son Safety Boiler Wks., Phila., Pa.

National Pipe Bending Co., New Haven, Conn.

Webster, Warren & Co., Phila., Pa.

Whitlock Coll Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.

Barnum, E. T., Detroit, Mich.

Champion Iron Co., Kenton, O.

Clinton Wire Cloth Co., Clinton, Mass.

DeKalb Fence Co., DeKalb, Ill.

Fenders, Iron and Wire.

Barnum, E. T., Detroit, Mich.

Champion Iron Co., Kenton, O.

Clinton Wire Cloth Co., Clinton, Mass.

DeKalb Fence Co., DeKalb, Ill.

Fine Shavers.

Blake & Johnson, Waterbury, Conn.

Grindstones.

Cleveland Stone Co., Cleveland, O.

Huron Grindstone Co., Port Austin, Mich.

Gunpowder, Makers of.

Laflin & Rand Powder Co., N. Y.

Hand Carts.

Lansing Wheelbarrow Co., Lansing, Mich.

Halter Chains.

Kelley & Woolworth, Niagara Falls, N. Y.

Handles.

New Process Raw Hide Co., Syracuse, N. Y.

New York Mallet and Handle Wks.

456 E. Houston St., N. Y.

Hauers, Door.

Chicago Spring Butt Co., Chicago, Ill.

Lane Bros., Poughkeepsie, N. Y.

Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.

Doscher, Martin, 88 Chambers, N. Y.

Graham, John H. & Co., 111 Chambers St., New York.

Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.

Hotchkiss, E. S., Bridgeport, Conn.

Stearns, E. C. & Co., Syracuse, N. Y.

Union Mfg. Co., 103 Chambers, N. Y.

Yale & Towne Mfg. Co., Stamford, Conn.

Hardware Mfrs. Agents.

Bingham, W. Co., Cleveland, O.

Graham, John H. & Co., 113 Chambers St., New York.

Hussey E. J. & Co., 80 John St., N. Y.

McCoy, Jos. F. Co., 29 Warren St., N. Y.

Stockley, Sweet & Lyon, 35 Barclay, N. Y.

Underhill, Clinch & Co., 94 Chambers St., N. Y.

Hardware Specialties.

Aome Shear Co., Bridgeport, Conn.

Belden Machine Co., New Haven, Conn.

Empire Portable Forge Co., Lansingburg, N. Y.

Enterprise Mfg. Co., Philadelphia, Pa.

Hotchkiss Edw. & Co., 29 B'way, N. Y.

Hotchkiss, E. S., Bridgeport, Conn.

MacKellar, E. S., Poughkeepsie, N. Y.

McKellar, E. S., 407 E. Houston St., N. Y.

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McKellar, E. S., 407 E. Houston St., N. Y.

McKellar, E. S., 407 E. Houston St., N. Y.

Machinery.
 Am. Tool Works, Cleveland, Ohio.
 Barnes, W. F. & John, Rockford, Ill.
 Becker, Jno. Mfg. Co., Pittsburgh, Mass.
 Bement, Miles & Co., Philadelphia, Pa.
 Bigelow, C. E., 45 Dey, N.Y.
 Bignal & Keefer Mfg. Co., St. Louis, Birmingham Iron Foundry, Birmingham, Conn.
 Blas, E. W. Co., Brooklyn, N. Y.
 Bogert, Jno. L., Flushing, N. Y.
 Bradford Mill Co., Cincinnati, Ohio.
 Briggs, Marvin, 12 Broadway, N. Y.
 Brown & Sharpe Mfg. Co., Providence, R. I.
 Carl's Sons, Thos., Allegheny, Pa.
 Cinn. Milling Mch. Co., Cincinnati, Ohio.
 Clapp, Geo. M., agt., 74 Cortlandt, N.Y.
 Coulter & McKenzie Mch. Co., Bridgeport, Conn.
 Cruikshank, D. B., Providence, R. I.
 Detric & Harvey Mch. Co., Baltimore, Md.
 Ehrhardt, Gustave & Sons Pittsburgh, Pa.
 Fitchburg Mch. Works, Fitchburg, Mass.
 Garvin Mch. Co., Laight & Canal Sts.
 Gould & Eberhardt, Newark, N. J.
 Hamilton Mch. Tool Co., Hamilton, O.
 Harrington, E. Son & Co., Phila., Pa.
 Hendey Machine Co., Torrington, Ct.
 Hill, Clarke & Co., Boston, Mass.
 Ingersoll Milling Machine Co., Rockford, Ill.
 Johnson, Israel H., Jr., & Co., Phila.
 Jones & Lamson Mch. Co., Springfield, Vt.
 Kelly, Daniel, Phila., Pa.
 Lodge & Davis Mch. Tool Co., Cincinnati, O.
 Lodge & Shipley Mch. Tool Works, Cincinnati, O.
 Lovegrove & Co., Philadelphia, Pa.
 McCabe, J. J., 66 Cortlandt, N. Y.
 Machinists Supply Co., Rochester, N. Y.
 Manville, E. J. Mch. Co., Waterbury, Conn.
 Morton Mfg. Co., Muskegon Heights, Mich.
 Newark Mch. Tool Works, Newark, N. J.
 New Haven Mfg. Co., New Haven, Conn.
 New York Mch. Dept., N. Y.
 Niles Tool Wks., 38 Liberty St., N. Y.
 Pedrick & Aver, Philadelphia, Pa.
 Pittsburgh Mch. Co., Pittsburgh, Pa.
 Place, Wm., 120 Broadway, N. Y.
 Pool, Robt. & Son Co., Baltimore, Md.
 Powell Pinner Co., Worcester, Mass.
 Pratt & Whitney Co., Hartford, Conn.
 Prentiss Tool & Supply Co., N. Y.
 Scranton Supply & Mchry. Co., Scranton, Pa.
 Sellers, Wm. & Co., Phila.
 Seifert's Sons, L. F., Philadelphia, Pa.
 Stow Flexible Shaft Co., Ltd., Phila.
 Toomer, Frank, Philadelphia, Pa.
 Wetherill, Robert & Co., Chester, Pa.
 Wilson, W. A., Rochester, N. Y.
 Woodward Mch. Co., Hartford, Conn.
Machinery for Hardware Manufacture.
 Adt, Jno. & Son, New Haven, Conn.
Machine Knives.
 Loring Coes & Co., Worcester, Mass.
 Loyd, John, 558-562 Water St., N. Y.
Machine Tools.—See machinery.
Machine Work.
 Papping, J., 55th St., & 11th Ave., N. Y.
Machinists' Scales.
 Coffin & Leighton, Syracuse, N. Y.
 Starrett, L. S., Athol, Mass.
Machinists' Tools and Supplies.
 Brown & Sharpe Mfg. Co., Providence, King, J. M. & Co., Waterford, N. Y.
 Sellers, Wm. & Co., Inc., Phila.
Mallets.
 N. Y. Mallet & Handle Works, N. Y.
Manufacturing Sites.
 Kokomo Enterprise Co., Kokomo, Ind.
Measuring Tapes.
 Lufkin Rule Co., Saginaw, Mich.
Meat Cutters.
 Enterprise Mfg. Co., Philadelphia, Pa.
Mechanical Drawing.
 Correspondence School of Mechanics, Scranton, Pa.
Metals.
 Fearing, Wm. S., 100 Chambers, N. Y.
 Hendricks Bros., 49 Chif., N. Y.
 Naylor & Co., 45 Wall, N. Y.
Metal Brokers.
 American Metal Co., N. Y.
Metallurgists.
 Britton, J. Blodgett, Phila.
Metal Saws.
 Ehrhardt, Gustave & Sons, Pittsburgh, Q. & Co., Chicago, Ill.
Milling Machines.
 Brown & Sharpe, Providence, R. I.
 Cinn. Milling Mch. Co., Cincinnati, Ohio.
 Ingersoll Milling Machine Co., Rockford, Ill.
 Pedrick & Aver, Phila., Pa.
Mincing Knives.
 Palmer Hdw. Mfg. Co., Troy, N. Y.
Mine Lamps.
 Darby, Edw. & Sons Phila., Pa.
 Leonard, E. B., Scranton, Pa.
 Leonard, T. F., Scranton, Pa.
Mining Screens.
 Harrington & King Perforating Co., Chicago, Ill.
 Howard & Morse, 45 Fulton, N. Y.
Mirrors.
 Rice, C. F., Chicago, Ill.
Model Work.
 Am. Vending Mch. Co., 29 Murray, N.Y.
Molding Sand.
 Chicago Foundry Supply Co., Chicago, Ill.
 Obermayer, S. Co., Cincinnati, O.
 Parxon, J. W. & Co., Phila.
 Whitehead Bros. Co., 517 W. 15th St., N. Y.
Detors, Water and Electric.
 C. & C. Electric Motor Co., 402 and 404 Greenwich St., N. Y.
 Dallett, Thos. H. & Co., Phila., Pa.
 Thomson, Houston Motor Co., Boston, Mass.
Mail Machinery.
 Pittsburgh Mfg. Co., Pittsburgh, Pa.
Nails (Cut) and Spikes.
 Borden & Lovell, 70 West, N. Y.
 Cumberland Nail & Iron Co., Phila.
 Oxford Iron Co., 31 Washington St.
 Pottstown Iron Co., Pottstown, Pa.
 Riverside Iron Wks., Wheeling, W. Va.
Nickel Platers' Supplies.
 Eddy Electric Mfg. Co., Windsor, Conn.
 Zucker & Levert Chemical Company, 10 to 14 Grand St., N. Y.
Norway Shapes, Rollers of.
 Rowland, William & Harvey, Bradford, Philadelphia
Nut Machines.
 Dunham Nut Mch. Co., Unionville, Ct.
Nuts, Bolts, &c., Makers of.
 American Bolt Co., Lowell, Mass.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Wm. H. Co., Pawtucket, R. I.
 Mt. Carmel Bolt Co., Mt. Carmel, Conn.
 Port Chester Bolt and Nut Co., Chester, N. Y.
 Russell, Burdall & Ward, Port Chester, Sternberg, J. B. & Son, Reading, Pa.
 Wilson, J. Fred., Worcester, Mass.
 Wm. H. Haskell Co., Pawtucket, R. I.
Oil Stones.
 Pike Mfg. Co., Pike Station, N. H.
Oil Stoves.
 Glazier Stove Co., Chelsea, Mich.
 Henry, J. T. Mfg. Co., Hamden, Conn.
Ovens.
 Winter, Francis, Philadelphia, Pa.
Oil Shees.
 Scranton Forging Co., Scranton, Pa.
Packing.
 Billington, Jas. H. & Co., Phila., Pa.
 Morris, Robt., St. Louis, Mo.
 N. Y. Belting & Packing Co., Ltd., N. Y.
Adlocks.
 Ames Sword Co., Chicopee, Mass.
 Fraim, E. T., Lancaster, Pa.
 Hillebrand & Wolf, Phila., Pa.
 Miller Loco Co., Philadelphia, Pa.
Paint.
 Detroit Granite Mfg. Co., Detroit, Mich.
 Dixon, Jos. Crucible Co., Jersey City, N. J.
 Garry Iron & Steel Roofing Co., Cleveland, O.
Paint Burners.
 Dangler Stove & Mfg. Co., Cleveland, O.
Paint Solictors.
 Fitzgerald, S. C., Washington, D. C.
 Howson & Howson, Phila. & Washington, D. C.
 Jenner, H. W. T., Washington, D. C.
 Stocking, E. B., Washington, D. C.
Perforated Metal.
 Clinton Wire Cloth Co., Clinton, Mass.
 Harrington & King Perforating Co., Chicago, Ill.
Phosphor Bronze.
 Phosphor Bronze Smelting Co., Limited, 612 Arch, Philadelphia.
Phosphor Tin.
 Crescent Phosphorized Metal Co., Philadelphia, Pa.
 Crosby Steam Gauge & Valve Co., Boston, Mass.
 Halk & Naumann, 616 Pearl, N. Y.
Hooks and Mattocks.
 Plumb, Fayette K., Philadelphia, Pa.
Pig Iron.
 Houston, C. B. & Co., Philadelphia, Pa.
 Mann, Edwin R., Philadelphia, Pa.
 Montour Iron & Steel Co., Danville, Pa.
 Taylor & Co., 45 Wall, N. Y.
 Pickands, Brown & Co., Chicago, Ill.
 Pilling & Crane, Philadelphia, Pa.
 Samuel, Frank, Philadelphia, Pa.
Pig Iron Storage.
 Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.
Pile Drivers.
 Vulcan Iron Wks., Chicago, Ill.
Pipe, Bent.
 National Pipe Bending Co., New Haven Pipe Cutting and Threading Machines.
 Signal & Keefer Mfg. Co., St. Louis, Mo.
 Merrill Mfg. Co., Toledo, O.
 Pancoast & Maule, Philadelphia.
 Saunderson Sons, D., Yonkers, N. Y.
Pipe Grips.
 Prentiss Pipe Co., 44 Barclay, N. Y.
 Pines, Fittigast, &c., Makers of, McHab & Harn Mfg. Co., N. Y.
Pipe, Water and Gas.
 Cumberland Nail & Iron Co., Phila., Pa.
 Donaldson Iron Co., Emmaus, Pa.
 Riverside Iron Works, Wheeling, W. Va.
Piano Irons, Manufacturers of.
 Buck Bros., Millbury, Mass.
Pianos, Manufacturers of.
 Hartley, R. & Lever, Co., N. Y.
Plate Bending Rolls.
 Schneebloth, H. A., 530 W. 28th St., N. Y.
Plate Iron and Steel, Mfrs. or.
 Atma-Standard Iron & Steel Co., Bridgeport, O.
 Lukens Iron & Steel Co., Coatesville, Pa.
 Moorhead-McLean Co., Pittsburgh, Pa.
 McIlvain & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimick & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa.
 Woodman Co., Philadelphia.
Plating, Nickel, Brass and Silver.
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Plumbage.
 Chicago Fdy. Supply Co., Chicago, Ill.
Pokers and Lifters.
 Troy Nickel Works, Troy, N. Y.
Polishing Machines.
 Watson & Stillman, 204 E. 43d, N. Y.
Polishing Wheel.
 La Massena, C. E. & Co., Newark, N. J.
Post Hole Diggers.
 Graham, John H. & Co., 113 Chambers St., New York.
 Kohler, F. E. & Co., Canton, O.
 Wister, L. & R. & Co., Philadelphia, Pa.
Poultry Netting.
 Barnum, E. T., Detroit, Mich.
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
 N. J. Wire Cloth Co., Trenton, N. J.
 "Silver Finish."
 Tyler Wire Wks Co., W. S., Cleveland, O.
 Wright & Colton Wire Cloth Co., Worcester, Mass.
Powder.
 Lefin & Rand Powder Co., 29 Murray New York Powder Co., 62 Liberty St., N. Y.
Powder Hack Saws.
 Millers Falls Co., 93 Read St., N. Y.
 Stover Novelty Wks., Freeport, Ill.
Pewter Hammer.
 Bradley & Co., Syracuse, N. Y.
 Belden Mch. Co., New Haven, Conn.
 Dienelt & Eisenhardt, Philadelphia.
 Dupont Mfg. Co., St. Johnsbury, Vt.
 Jenkins & Linglie, Bellefonte, Pa.
Presses, Dies, &c.
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles, Parker Press Co., Brooklyn, N. Y.
 Waterbury Mch. Co., Waterbury, Conn.
Presses, Power, Makers of.
 Bliss, E. W. Co., Brooklyn, N. Y.
 Eaton, Geo. H. & Co., Boston, Mass.
 Manville, E. J. Mch. Co., Waterbury, Ct.
 Merriman, A. H., Meriden.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Waterbury Farrel Foundry and Manufacturing Co., Waterbury, Conn.
Pulleys.
 Keystone Clutch, Mch. Wks., Phila., Pa.
Pulverizing Mill.
 Bradley Fertilizer Co., Boston, Mass.
Pumping Machinery.
 Coulter & McKenzie Mch. Co., Bridgeport, Conn.
 Green Bros., Steam Pump Works, In Goulds Mfg. Co., Seneca Falls, N. Y.
 Indianapolis, Ind.
 Hooker-Colliore Steam Pump Co., Chicago, Ill.
 McCowan, J. H. & Co., Cincinnati, O.
 Maslin, J. & Son, Jersey City, N. J.
 Norwalk Iron Wks. Co., Co., St. Norwalk, Conn.
 Southwark Fdy. & Mch. Co., Phila., Pa.
 Southwark Pump Wks., Easthampton, Mass.
 Worthington, Henry R., 86 & 88 Liberty St., N. Y.
Pumps, Makers of.
 Bellevue Pump Co., Bellevue, Iowa.
 Deming Co., Salem, O.
 Douglas, W. & B., Middletown, Conn.
 Mast, Koos & Co., Springfield, O.
 Myers, F. E. & Bro., Ashland, O.
 St. Joseph Pump Co., St. Joseph, Mo.
Punches and Shears, Hand and Power.
 E. W. Bliss Co., Brooklyn, N. Y.
 Cleveland Hdw. Co., Cleveland, O.
 Cockburn Barrow & Mch. Co., Jersey City, N. J.
 Crosby, G. A. & Co., Chicago, Ill.
 Eaton, Geo. H. & Co., Boston, Mass.
 New Doty Mfg. Co., Janesville, Wis.
 Schneebloth, H. A., 530 W. 28th St., N. Y.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Wais & Roos, Punch & Shear Co., Cincinnati, Ohio.
 Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
 Watson & Stillman, 204 E. 43d, N. Y.
Rails, Old and New.
 Hirsh, L. K., Chicago, Ill.
 Perry, W. H. & Co., Providence, R. I.
Rat and Mense Traps.
 Burditt & Williams, Boston, Mass.
 Estey, W. S., 66 Fulton, N. Y.
 Ripley Mfg. Co., Unionville, Conn.
Razors.
 Butcher, W. & S., 185 Duane St., N. Y.
 Curley, J. & Bro., 6 Warren St., N. Y.
 Electric Cutlery Co., 113 Chambers, N. Y.
 Schmitz, E. L., 100 Read St., N. Y.
 J. R. Torrey Razor Co., Worcester, Mass.
Refrigerator Door Fasteners.
 Conroy, P. J. & Co., Philadelphia.
Rivets.
 Blaikie & Johnson, Waterbury, Conn.
 Burden Iron Co., Tr. Y. N. Y.
 Cope & Drew, Plymouth, Mass.
 Henderson, Jas. S., 165 Greenwich, N. Y.
 McIlvain & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimick & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
Roasters & Bakers.
 Matthai, Ingam & Co., Baltimore, Md.
Rock Drills.
 Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
 Rand Drill Co., 28 Park Place, N. Y.
Riveting Machines.
 Adt, Jno. & Sons, New Haven, Conn.
Roasters & Bakers.
 Matthai, Ingam & Co., Baltimore, Md.
Rock Drills.
 Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
 Rand Drill Co., 28 Park Place, N. Y.
Rolling Mill Machinery.
 Birmingham Iron Fdry., Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
 Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
 Mahoning Fdry. & Mch. Co., Danville, Pa.
 Morgan Construction Co., Worcester, Mass.
 Robinson-Rea Mfg. Co., Pittsburgh.
 Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
 Tretterbury Mfg. Co., Pittsburgh, Pa.
 Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Roll Lathes.
 Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Bells, Chilled, Sand and Steel.
 Booth, The Lloyd Co., Youngstown, O.
 Garrison, A. Fdry. Co., Pittsburgh, Pa.
 Johnson Foundry Co., Johnston, Pa.
 Seaman, Sleeth & Black, Pittsburgh.
 Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Roofing.
 Berlin Iron Bridge Co., E. Berlin, Conn.
 Boston Bridge Works, Boston, Mass.
 Cambridge Roofing Co., Cambridge, O.
 Cincinnati Corrugating Co., Piqua, O.
 Johns, H. W. Mfg. Co., 87 Maiden Lane
Rope and Web Goods.
 Cover, Mfg. Co., West Troy, N. Y.
 Cover's Saddlery Wks., Farmer, N. Y.
Rope Wheels.
 Cresson, Geo. V. Co., Philadelphia, Pa.
Rubber Goods.
 Canfield, H. O., Bridgeport, Conn.
Rules, Manufacturers of.
 Lufkin Rule Co., Saginaw, Mich.
 Standard Tool Co., Athol, Mass.
 Stanley Rule & Level Co., 29 Chambers, N. Y.
Sad Irons.
 Universal Sad Iron Co., Milwaukee, Wis.
Sand Paper.
 Baeder, Adamson & Co., Phila., Pa.
Sash Balances.
 Caldwell Mfg. Co., Rochester, N. Y.
 Pullman Sash Balance Co., Rochester, N. Y.
 Stewart & Baker, Rochester, N. Y.
 Vanderbilt Sash Balance Co., Canandaigua, N. Y.
Sash Cords and Chains.
 Morton, Thos., 65 Elizabeth, N. Y.
 Ossawam Mills Co., Norwich, Conn.
 Samson Cordage Works, Boston, Mass.
 Smith & Egge, Mfg. Co., Bridgeport.
Sash Holders.
 Motley, Peter, Philadelphia, Pa.
Sash Locks.
 Ives, H. B. & Co., New Haven, Conn.
Sash Pullers.
 Empire Portable Forge Co., Lansingburgh, N. Y.
 Palmer Hardware Mfg. Co., Troy, N. Y.
Sash Pulley Marker.
 Skelly J. W. & Son, Bristol, Conn.
Sash Weights.
 Brown, E. E. & Co., Philadelphia, Pa.
Sash Weight Fasteners.
 Skelly, J. W. & Son, Bristol, Conn.
Saws, Makers of.
 Atkins, E. C. & Co., Indianapolis, Ind.
 Watson, Henry & Sons, Phila., Pa.
 Biles, C. A. & Co., 333-338 Carroll Ave, Chicago, Ill.
 National Saw Co., 93 Read St., N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.
Saw Sets.
 Kohler, F. E. & Co., Canton, Ohio.
 Tarter Mfg. Co., 84-86 Chambers, N. Y.
Scales, Manufacturers of.
 Buffalo Scale Co., Buffalo, N. Y.
 Chatillon, John & Sons, 85-89 Cliff, N. Y.
Scrapers, Road.
 Am. Steel Scraper Co., Sidney, Ohio.
 Kilbourne & Jacobs Mfg. Co., Columbus, O.
 Sidney Steel Scraper Co., Sidney, O.
Screens, Door and Window.
 Queen Anne Screen Co., Burlington, Vt.
Screw Cutting Machinery.
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.
Screw Drivers.
 Brown, R. H. & Co., New Haven, Conn.
 Capitol Mfg. Co., Chicago, Ill.
 Chantrel Tool Co., Reading, Pa.
 Mayhew, H. H. Co., Sheinburne Falls, Mass.
Screw Plate and Pipe Cutter.
 Jarecki Mfg. Co., Erie, Pa.
Screws, Makers of.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Wm. H. Haskell Co., Pawtucket.
 Miles, F. S., 205 Quarry, Philadelphia.
 National Screw & Tack Co., Cleveland, Ohio.
 Reynolds & Co., New Haven, Conn.
 Worcester Machine Screw Co., Worcester, Mass.
Screw Saws.
 Barnes, W. F. & John, Rockford, Ill.
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Scythe Stones and Whetstones.
 Pike Mfg. Co., Pike Statn., N. H.
 Cleveland Stone Co., Cleveland, O.
 Huron Grindstone Co., Port Austin, Mich.
Shafting, Makers of.
 Cresson, Geo. V. Co., Philadelphia, Pa.
 Fairmount Mch. Co., Philadelphia, Pa.
 Fitzsimons & Co., Cleveland, Ohio.
 Sellers, Wm. & Co., Inc., Phila., Pa.
 Stow Mfg. Co., Binghamton, N. Y.
Shaped Iron and Steel, Manufacturers of.
 Atma-Standard Iron & Steel Co., Bridgeport, O.

Allentown Rolling Mill, Phila.
Illinois Steel Co., Chicago, Ill.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phoenix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Heinisch, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, Manufacturers of.
Alta-Standard Iron and Steel Co., Bridgeport, Conn.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Moorehead-McCleane Co., Pittsburgh.
Pierson & Co., 28 Broadway, N. Y.
Reilly, John W., Fort Hunter P. O., Pa.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch, A. B. & Co., Peoria, Ill.

Shovels, Spades and Scoops.
Myers, H. M. Co., Beaver Falls, Pa.

Sinks.
Douglas, W. & B., Middletown, Conn.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Sam'l., Skate Mfg. Co., Worcester, Mass.

Skates, Roller.
Henley, M. C., Richmond, Ind.
Winslow, Sam'l., Skate Mfg. Co., Worcester, Mass.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Speed Indicators.
Church & Sleight, 109 Fulton St., N. Y.

Speier.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N. Y.

Springs.
Cary, Alanson, 240-242 W., 29th St., N. Y.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Nourse, Fred. Co., 315 to 319 E., 22d St., N. Y.
Sabin Machine Co., Montpelier, Vt.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Cardisley, J., 149 & 151 Baxter St., N. Y.
Chicago Spring Butt Co., Chicago, Ill.
Pulman Sash Balance Co., Rochester, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Spring Keys and Cotters.
Whitman & Barnes Mfg. Co., Syracuse, N. Y.

Sprinklers.
Smith, Oliver A., Clarkston, Mich.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St., New York.

Stamping Works.
Aver Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co., Binghamton, N. Y.

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N. Y.
Bristol Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., Makers of
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trthewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Phila., Pa.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St. N. Y.
Harrison Safety Boiler Wks. Phila., Pa.

Steel Balls.
Grant Anti-Friction Ball Co., Fitchburg, Mass.

Steel, Cold Rolled Strip.
Wilmet & Hobbs Mfg. Co., Bridgeport, Conn.

Steel Figures and Alphabets.
Krogerud, W., 61 Fulton, N. Y.

Steel Importers.
Abbott, Jere & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., N. Y.
John St., N. Y.
Jessop, Wm. & Sons, Sheffield, Eng.
Land, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 88 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mischer's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Alta-Standard Iron & Steel Co., Bridgeport.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Herman & Co., 103 Duane St.
Buffalo Steel Foundry, Buffalo, N. Y.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Philadelphia, Pa.
Eiken & Co., Haren, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department or Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Illinois Steel Co., Chicago, Ill.
Jessop, Wm. & Sons, Sheffield, Eng.
Land, or 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorehead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 88 John, N. Y.
Naylor & Co., 45 Wall, N. Y.
Pennsylvania Steel Co., Steelton, Pa.
Pottsville Iron and Steel Co., Potts-ville, Pa.
Reilly, J. W., Fort Hunter P. O., Pa.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pitts-burgh, Pa.
Taylor Iron & Steel Co., High Bridge, N. J.
Wordlaw, S. & C., Sheffield, Eng.
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Steel, Manufacturers' Agents.
Barnes, C. K. & Co., Philadelphia, Pa.
Corning, Edw. & Co., 29 B'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, Manufacturers of.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Illinois Steel Co., Chicago, Ill.
Penns. Steel Co., Steelton, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Spiral Springs, Manufacturers.
Chatillon, John & Sons, N. Y.
Roland, Wm. & Harvey, Frankford.
Wolff, R. H. & Co., Ltd., 118 Street and Harlem River, N. Y.

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, Eng.
Land, or 91 John, N. Y.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stove Pipe Thimbles.
Cheney, S. & Son, Manlius, N. Y.

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Strops.
Electric Cutlery Co., 113 Chambers, N. Y.
J. R. Torrey & Co., Worcester, Mass.

Stripping Machines.
Schmitz, E. Lothar, 92 Reade St., N. Y.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation, Boston, Mass.
A. Field & Sons, Taunton, Mass.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, N. Y.
Nat. Screw & Tool Co., Cleveland, O.
Phillips, E. & Sons, South Hanover, N. Y.
Plymouth Mills, Plymouth, Mass.
Trufant, W. E., Whitman, Mass.

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Phila., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila., Philadelphia.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St., Mattath, Ingram & Co., Baltimore, Md.

Tire Upsetters.
Butts & Ordway, Boston, Mass.
Illinois Iron & Bolt Co., Carpenters-ville, Ill.

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N. Y.

Tools.
Atkins, E. C. & Co., Indianapolis, Ind.
Britten, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Chamirel Tool Co., Reading, Pa.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Miller's Fall Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lan-caster, Pa.
Illinois Iron & Bolt Co., Carpentersville, Ill.
Plumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'.
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.

Transom Lifters.
Wollensak, J. F., Chicago, Ill.

Trucks, Manufacturers of.
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co., Lansing, Mich.

Tubes, Seamless Drawn Copper.
Asonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Leng's John S. Son & Co., 4 Fletcher St., Ne York.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twine Cutters.
Wild, A. L., Providence, R. I.

Twist Drills, Makers of.
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 66 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vices.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Mitters Fall Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternberg, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Well Boring Machines.
Oil Well Supply Co., Pittsburgh, Pa.

Well Machinery.
Amer. Well Works, Aurora, Ill.

Wheelbarrows.
Akron Tool Co., Akron, O.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Colum-bus, Ohio.

Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweat Mfg. Co., Minneapolis, Minn.

Whips.
American Whip Co., Westfield, Mass.

Window Cord, Makers of.
Samson Cordage Works, Boston, Mass.

Wire, Manufacturers of.
Amer. Spiral Spring Co., Pittsburg, Pa.
Amer. Wire Nail Co., Anderson, Ind.
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Fatey, W. S., 55 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff, How & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Works, Milwaukee, Wis.
Schoeller & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Higganum Hdwy. Co., Higganum, Conn.
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 88 John, N. Y.

Wire Door Mats.
Hartman Mfg. Co., Beaver Falls, Pa.
The Wire Goods Co., Worcester, Mass.

Wire Fences.—See *Screening, Iron and Wire*.

Wire Goods, Manufacturers of.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawa Mills Co., Norwich, Conn.
Schoeller & Sons, Buffalo, N. Y.
Whitman & Barnes Mfg. Co., Syracuse, N. Y.
Wire Goods Co., Worcester, Mass.
Wickwire Bros., Cortland, N. Y.
Williamson, C. T., Wire Novelty Co., Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Amer. Wire Nail Co., Anderson, Ind.
Baackes Wire Nail Co., Cleveland, O.
Consolidated Steel & Wire Co., St. Louis, Mo.
Field, A. & Sons, Taunton, Mass.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Phillips, E. & Sons, South Hanover Mass.
Townsend & Co., Phila., Pa.
Plymouth Mills, Plymouth, Mass.
Salem Wire Nail Co., Salem, O.
Whitney, A. K. & Co., New York City

Wire Rods, Steel.
Amer. Wire Nail Co., Anderson, Ind.
Consolidated Steel & Wire Co., St. Louis, Mo.
Illinois Steel Co., Chicago, Ill.
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel Makers.
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco.
Hasard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Woodenware.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Wood-Working Machinery.
Pay, J. A. & Egan Co., Cincinnati, O.
Sebastian Lathe Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrenches, Manufacturers of.
Bemis & Call, Hardware & Tool Co., Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn.
Capitol Mfg. Co., Chicago, Ill.
Central Iron & Steel Co., Brazil, Ind.
Coes Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
Portsmouth Wrench Co., Boston, Mass.
Trimont Mfg. Co., Roxbury, Mass.
Williams, J. H., Brooklyn, N. Y.

Wringers.
Colby Wringer Co., Montpelier, Vt.

ALPHABETICAL INDEX TO ADVERTISERS.

Abbott, Jere & Co.	19	Brown & Sharpe Mfg. Co.	58	Crosby Steam Gauge & Valve Co.	3	Hammer & Co.	96
Acme Shear Co.	77	Bryden Horse Shoe Co.	94	Cross & Speirs Machine Co.	47	Hampden Emery & Corundum Co.	56
Adt, John & Son.	47	Buck Bros.	77	Crown Smelting Co.	3	Hardware Board of Trade.	62
Aetna-Standard Iron & Steel Co.	21	Buckeye Engine Co.	35	Cruikshank, D. B.	59	Harrington, E., Son & Co.	55
Aiken, Henry.	30	Buffalo Forge Co.	65&110	Cumberland Nail & Iron Co.	18	Harrington & King Perforating Co.	11
Akron Tool Co.	98	Buffalo Scale Co.	96	Curley, J. & Bro.	77	Harrisburg Fdy. & Mch. Wks.	32
Alexander Bros.	39	Buffalo Edge Tool Works.	76	Cushman Chuck Co.	50	Harrison Safety Boiler Works.	37
Allentown Rolling Mills.	29	Buffalo Specialty Mfg. Co.	70	Dallett, Thos. H. & Co.	52	Hart, Henry C. Mfg. Co.	
Almond, T. R.	43	Bullock Bellows Co.	45	Dame, Stoddard & Kendall.	84	Hart Mfg. Co.	50
Am. Bit Brace & Tool Co.	79	Burden Iron Co.	94	Dangler Stove & Mfg. Co.	88	Hartford Steam Boiler Insp. and Ins.	
Am. Bolt Co.	101	Burditt & Williams.	92	Darby, Edw. & Sons.	8	Co.	34
Am. Metal Co.	4	Burgess & Loxley.	24	Davies, Chas. & Co.	76	Hartley & Graham.	1
Am. Pig Iron & Storage Warrant Co.	15	Burke, P. F.	95	Davis & Cook.	69	Hartman Mfg. Co.	9
Am. Screw Co.	14	Burnham, Geo. & Co.	46	Davis, I. B. & Son.	38	Haskell, Wm. H. Co.	102
Am. Spiral Spring Co.	4	Burr & Houston Co.	27	Davol, John & Sons.	2	Haydock & Bissell.	62
Am. Stamping Co.	87	Bussenius & Cunliffe.	61	Dean Bros. Steam Pump Works.	38	Hazard Mfg. Co.	6
Am. Steel Scraper Co.	98	Butcher, W. & S.	78	Deltz, A. E.	93	Heimisch's R. Sons.	77
Am. Tool Co.	86	Butterfield & Co.	51	DeKalb Fence Co.	9	Henderson Bros.	33
Am. Tool Works.	59	Butts & Ordway.	46	Deming Co.	70	Hendey Machine Co.	66
Am. Vending Machine Co.	65	Byram & Co.	32	Detrick & Harvey Machine Co.	55	Hendricks Bros.	2
Am. Well Works.	36	C. & C. Electric Motor Co.	33	Detroit Cork Screw Co.	80	Henley, M. C.	85&100
Am. Whip Co.	109	Caldwell Mfg. Co.	90	Detroit Foundry Equipment Co.	32	Henn, A. S. & Co.	85
Am. Wire Nail Co.	13	California Wire Works.	5	Detroit Graphite Mfg. Co.	29	Herbrand Co.	24
Ames Sword Co.	90	Cambrria Iron Co.	20	Diamond State Iron Co.	94	Herrick, J. A.	31
Ansonia Brass & Copper Co.	2	Cambridge Iron & Steel Co.	25	Dienelt & Elsenhardt.	46	Hertz, T. & Son.	4
Arcade Malleable Iron Co.	25	Cambridge Roofing Co.	15	Dissont, Henry & Sons.	73	Higginanum Hdw. Co.	80
Armstrong Mfg. Co.	45	Canfield, H. O.	40	Dixon, Jos., Crucible Co.	40	Hiles, C. A. & Co.	80
Arnold, F. H.	6	Canton Saw Co.	72	Donaldson Iron Co.	27	Hillebrand & Wolf.	49
Artificial Gas Engineering Co.	31	Capitol Mfg. Co.	97	Doscher, Martin.	77	Hill, Clarke & Co.	60
Aschman Steel Casting Co.	27	Carbon Steel Co.	21	Douglas, W. & B.	70	Hirsch, L. K.	61
Ashcroft Mfg. Co.	36	Carlin's Sons, Thomas.	61	Draper Machine Tool Co.	65	Hobson, F., Seaman & Co.	19
Atkins, E. C. & Co.	72	Carpenter, J. M. Tap & Die Co.	109	Dudgeon, Richard.	48	Hoffman, J. W. & Co.	18
Atlas Tack Corporation.	12	Carten, Henry J.	31	Duffy, J. A.	63	Hogan, John L. & Co.	18
Avery Stamping Co.	1	Cary, Alanson.	5	Dunbar Bros.	5	Hoggson & Pettis Mfg. Co.	50
Baackes Wire Nail Co.	18	Chadborne & Coldwell Mfg. Co.	100	Dunham Nut Machine Co.	55	Hollands Mfg. Co.	71
Babcock & Wilcox Co.	37	Chambers Bros. Co.	102	Dupont Mfg. Co.	42	Holmes, Booth & Haydens.	2
Baeder, Adamson & Co.	68	Champion Blower & Forge Co.	49	Dwight slate Machine Co.	45	Holmes & Edwards Silver Co.	80
Banker & White.	74	Champion Iron Co.	9	Eagle Anvil Works.	81	Holt, Hiram & Co.	101
Bardsley, J.	91	Chantrell Tool Co.	68	Eaton, Geo. H. & Co.	44	Horton & Son Co., E.	50
Barnes, C. K. & Co.	22	Chapman Mfg. Co.	110	Eccles, Richard.	92	Hotchkiss, E. S.	86
Barnes, W. F. & John.	43	Chapman Valve Mfg. Co.	35	Empire Portable Forge Co.	89	Houston, C. B. & Co.	18
Barnett, G. H.	75	Chatillon, John & Sons.	88	Enterprise Mfg. Co.	33	Howard Iron Works.	96
Barnum, E. T.	9	Cheney, S. & Son.	27	Edge Moor Iron Co.	28	Howard & Morse.	7
Bass Foundry & Machine Works.	35	Chess Bros.	25	Ehrhardt, Gustave & Son.	12	Howson & Howson.	6
Becker, Jno. Mfg. Co.	42	Chester Steel Casting Co.	26	Eiken & Co.	53	Hudson, C. E. & Co.	81
Belden Machine Co.	43	Chicago Foundry Supply Co.	29	Electric Cutlery Co.	78	Hulbert Bros. & Co.	109
Bell, Geo. E.	51	Chicago Spring Butt Co.	92	Emory, P. P. Mfg. Co.	9	Hunt, Robert W. & Co.	51
Belleview Pump Co.	71	Christy Knife Co.	79	Empire Portable Forge Co.	89	Hurley Bros.	43
Bement, Miles & Co.	46	Cleveland City Forge & Iron Co.	1	Ette & Henger Mfg. Co.	101	Huron Grindstone Co.	56
Bemis & Call Hardware & Tool Co.	96	Cleveland Hardwae Co.	47	Etting, Edw. J.	18&28	Hussey, E. J. & Co.	62
Berger Bros.	96	Cleveland Rubber Works.	79	Foos Mfg. Co.	47	Ideal Mfg. Co.	83
Berlin Iron Bridge Co.	10	Cleveland Stamping & Tool Co.	87	Forehand Arms Co.	84	Illinois Iron & Bolt Co.	48
Best, Fox & Co.	39	Cleveland Stone Co.	64	Fraim, E. T.	90	Illinois Pure Aluminum Co.	87
Bethlehem Iron Co.	22	Cleveland Twist Drill Co.	51	Frankford Steel Co.	28	Illinois Steel Co.	21
Bevin Bros. Mfg. Co.	94	Clinton Wire Cloth Co.	8	Freeport Bicycle Mfg. Co.	83	Indiana Wire Fence Co.	3
Bickford Drill & Tool Co.	54	Cobb & Drew.	6	Frost Thill Spring Co.	92	Ingersoll Milling Machine Co.	44
Bicycle Step Ladder Co.	89	Cockburn Barrow & Machine Co.	100	Fulton Iron & Engine Works.	54	Ives, H. B. & Co.	98
Bigelow, C. R.	60	Coles, Loring & Co.	97	Gardner, Jas. & Sons.	28	Jacobus, W. H.	102
Bignall & Keeler Mfg. Co.	48	Clark & Cowles.	6	Fitch, W. & E. T.	109	Jarecki Mfg. Co.	45
Billings & Spencer Co.	96	Cleveland Block Co.	93	Fitchburg Machine Works.	46	Jefferson County Mining & Quarrying Co.	82
Billington, J. H. & Co.	34	Cleveland City Forge & Iron Co.	1	Fitzgerald, S. C.	6	Jeffrey Mfg. Co.	39
Bingham, W. Co.	88	Cleveland Hardwae Co.	47	Fitzsimons & Co.	18	Jenkins Bros.	1
Birmingham Iron Foundry.	25	Cleveland Rubber Works.	79	Flagg, Stanley G. & Co.	110	Jenkins & Lingle.	43
Blake & Johnson.	13	Cleveland Stamping & Tool Co.	87	Foos Mfg. Co.	47	Jenner, H. W. T.	6
Bliss Co., E. W.	43	Cleveland Stone Co.	64	Forehand Arms Co.	84	Jessop, Wm. & Sons.	19
Boardman, L. & Son.	69	Cleveland Twist Drill Co.	51	Fraim, E. T.	90	Johns, H. W. Mfg. Co.	16
Bogert, John L.	65	Clinton Wire Cloth Co.	8	Frankford Steel Co.	28	Johnson Foundry Co.	27
Boker, Hermann & Co.	19	Colby Wringier Co.	89	Freeport Bicycle Mfg. Co.	83	Johnson, I. G. & Co.	110
Boone, W. C. Mfg. Co.	24	Coldwell Lawn Mower Co.	100	Frost Thill Spring Co.	92	Johnson, I. H., Jr., & Co.	54
Booth, The Lloyd Co.	28	Colliau, Victor.	30	Garrison, A., Foundry Co.	25	Jones, B. M. & Co.	22
Borden & Lovell.	6	Collins, W. S.	97	Garry Iron & Steel Rfg. Co.	11	Jones, Jesse & Co.	69
Borgner, Cyrus.	28	Coffin & Leighton.	45	Garvin Machine Co.	60	Jones & Lamson Machine Co.	66
Boston Bridge Works.	16	Colburn, A. L.	50	Gauthier Steel Department.	16&22	Kaiser, Ellison & Co.	19
Boston Gear Works.	36	Colby Wringier Co.	89	Gaylord, F. L. Co.	3	Keeley, Jerome & Co.	18
Boston & Lockport Block Co.	98	Coldwell Lawn Mower Co.	100	Gilbert & Bennett Mfg. Co.	8	Kelley & Woolworth.	76
Box, Alfred & Co.	54	Conroy, P. J. & Co.	91	Glazier Stove Co.	67	Kelly, Daniel.	60
Bradford Mill Co.	54	Consolidated Steel & Wire Co.	15	Goodell Co.	78	Kennedy, Julian.	31
Bradlee & Co.	17	Continental Iron Works.	35	Goodell, J. W.	70	Keyless Lock Co.	90
Bradley & Co.	41&109	Corning, Edw. & Co.	17	Goubert Mfg. Co.	33	Keys, W. W. & R. M. Co.	109
Bradley Fertilizer Co.	43	Correspondence School of Mechanics.	47	Gould & Eberhardt.	40	Keystone Clutch & Machine Works.	51
Brass Goods Mfg. Co.	2	Cotton, Barclay W. & Co.	17	Goulds Mfg. Co.	39	Keystone Mfg. Co.	91
Bridgeport Chain Co.	81	Coulter & McKenzie Machine Co.	46	Grand Crossing Tack Co.	12	Kilbourne & Jacobs Mfg. Co.	98
Bridgeport De-oxidized Bronze & Metal Co.	3	Covert Mfg. Co.	67	Grant Anti-Friction Ball Co.	45	Kilmor Mfg. Co.	7
Bridgeport Gun Implement Co.	52	Covet's Saddlery Works.	67	Grant Corundum Wheel Mfg. Co.	56	King, J. M. & Co.	75
Briggs, Marvin.	60	Cox, Justice, Jr.	22	Green, A. H.	96	Knapp & Cowles Mfg. Co.	88
Bristols' Mfg. Co.	1	Cramp, Wm. & Sons S. & E. B. Co.	3	Gurney, F. B.	77	Koch, A. B. & Co.	70
Britton, Horace E.	72	Crescent Phosphorized Metal Co.	3	Haight & Clark.	27	Kohler, F. E. & Co.	98
Britton, J. Blodgett.	30	Crescent Steel Co.	24	Haines & Zimmerman.	64	Konglows, Otto.	70
Broderick & Bascom Rope Co.	6	Cresson, Geo. V. Co.	44	Haines Gauge Co.	30	Kreischer, B. & Sons.	28
Bronson Supply Co.	88	Croissaint, M.	89	Halk & Naumann.	3	Krogsrud, W.	74
Brown, E. E. & Co.	98	Crosby, G. A. & Co.	68	Halsey, Jas. T.	49	La Belle Steel Co.	28
Brown Holsting & Conveying Mch. Co.	39	Crosby, G. A. & Co.	43	Hamilton Machine Tool Co.	47	Lafin & Rand Powder Co.	25

Lamberson, B.	62	New Doty Mfg. Co.	55	Ridgway, Craig & Son.	53	Tablet & Ticket Co.	65
Lane Brothers.	90	New Haven Copper Co.	2	Riehle Bros. Testing Machine Co.	42	Talcott, W. O.	40
Lang Mfg. Co.	97	New Haven Mfg. Co.	46	Ripley Mfg. Co.	87	Taylor Iron & Steel Co.	24
Lansing Wheelbarrow Co.	98	New Haven Wire Mfg. Co.	6	Riverside Iron Works.	20	The Audubon.	65
Lape, W. E.	101	N. J. Wire Cloth Co.	8	Roberts, A. & P. & Co.	20	Thomson Electric Welding Co.	24
Laughlin, Alex & Co.	31	New Process Twist Drill Co.	52	Roberts, Frank C & Co.	38	Thomson-Houston Motor Co.	54
Lea, J. Tatnall & Co.	23	New Process Raw Hide Co.	46	Roberts Mfg. Co.	39	Tiebout, W. J.	91
Lean, D. R. Co.	30	Newton & Shipman.	19	Robinson-Rea Mfg. Co.	26	Titchener, E. H. & Co.	11
Leavitt Machine Co.	71	N. Y. Belting & Packing Co.	40	Rogers, The Wm. Mfg. Co.	80	Tod, Wm. & Co.	35
Le Count, C. W.	98	N. Y. Machinery Depot.	59	Rollason Gas Engines.	36	Toledo Bicycle Co.	23
Leechburg Foundry & Machine Co.	24	N. Y. Mallet & Handle Works.	100	Rouse, Hazard & Co.	67	Toledo Block Works.	93
Le Massena, C. E. & Co.	56	N. Y. Powder Co.	25	Rowland, Wm. & Harvey.	110	Toomey, Frank.	60
Leng's, Jno. S. Son & Co.	110	Nicholson File Co.	74	Russell, Burdsall & Ward.	110	Torrey, J. R. Razor Co.	77
Leonard, B. E.	97	Nicolls, Wheeler & Co.	17	Russia Cement Co.	69	Totten & Hogg Iron and Steel Fdry.	
Leonard, J.	22	Niles Tool Works.	60	St. Joseph Pump Co.	71	Co.	25
Leonard, T. F.	97	North Bros. Mfg. Co.	18	St. Louis Bronze & Aluminum Works	2	Townsend, W. P. & Co.	102
Leschen, A. & Sons Rope Co.	6	North Bros. Mfg. Co.	67	Sabin Machine Co.	4	Trenton Iron Co.	4
Levis, Henry & Co.	22	Northampton Cutlery Co.	78	Salem Foundry & Machine Shop.	54	Trenton Malleable Iron Co.	27
Lidgerwood Mfg. Co.	110	Northampton Emery Wheel Co.	56	Salem Wire Nail Co.	13	Threthewey Mfg. Co.	32
Lindsay, Jas. G. & Co.	18	Northwest Malleable Iron Co.	26	Samson Cordage Works.	1	Trimont Mfg. Co.	66
Link-Belt Engineering Co.	43	Norton Emery Wheel Co.	56	Samuel, Frank.	17	Troy Nickel Works.	77
Lockhart Iron & Steel Co.	23	Norton & Jones Machine Tool Works.	39	Sargent Co.	28	Tucker & Dorsey Mfg. Co.	85
Lodge & Davis Machine Tool Co.	58&59	Norwalk Iron Works Co.	38	Saunders Sons, D.	48	Tudor Iron Works.	1
Lodge & Shipley Machine Tool Co.	57	Nourse, Fred Co.	5	Scattergood, H. W.	65	Tyler Wire Works Co. W. S.	66
Loring, Chas. Carroll & Co.	109	Noyes, B. B. & Co.	79	Schaeffer & Co.	99	Underhill, Clinch & Co.	76
Lovell, Jno. P. Arms Co.	83	Nubian Iron Enamel Co.	53	Scheeler & Son.	9	Union Fdry & Mch Co.	36
Lovell Mfg. Co., Ltd.	65	Obermayer, S. Co.	29	Schmitz, E. Lothar.	76	Union Mfg. Co.	50
Lovell, Tracy & Co.	95	Ogden & Wallace.	22	Schneekloth, H. A.	47	Union Metallic Cartridge Co.	1
Lovsgrove & Co.	60	Ohio Lantern Co.	80	Schneider & Trenkamp Co.	88	Unity Door Check Co.	91
Loyd, John.	92	Oil Well Supply Co.	31	Scott, Geo. M.	48	Universal Sad Iron Co.	71
Ludlow-Saylor Wire Co.	7	Old Dominion Iron & Nail Works Co.	95	Scoville Mfg. Co.	2	Valentine, M. D. & Bro.	28
Lufkin Rule Co.	71	Osborn, G. Edw. & Co.	35	Scranton Forging Co.	94	Valley Pump Works.	38
Lukens Iron & Steel Co.	17	Ossawan Mills Co.	91	Scranton Supply & Machine Co.	61	Van Dorn Iron Works Co.	9
Lundberg, Gustaf.	19	Paxson, J. W. & Co.	29	Seaman, Sleeth & Black.	25	Vanderbilt Sash Balance Co.	91
McCabe, J. J.	59	Pancoast & Maule.	49	Sebastian Lathe Co.	54	Van Wagoner & Williams Co.	110
McCaffrey File Co.	74	Ostrander, W. R. & Co.	96	Sellers, Wm. & Co.	55	Victor Mfg. Co.	91
McClure, Amsler & Co.	30	Otto Gas Engine Works.	36	Senecca Falls Mfg. Co.	54	Vulcan Iron Works.	33
McCoy, Jos. F. & Co.	88	Oxford Iron & Nail Co.	11	Sessions Foundry Co.	26	Wadham's Oil & Grease Co.	36
McFarland, Wm.	4	Packer, C. W.	67	Seyfert's Sons, L. F.	59	Wals & Roos., P. & S. Co.	45
McGowan, J. H. & Co.	38&101	Palmers & De Mooy.	26	Shickle-Harrison & Howard Iron Co.	24	Wallace, Wm. H. & Co.	22
McIlvain, Wm. & Sons.	28	Palmer Hardware Mfg. Co.	92	Shipman Engine Co.	36	Wardlow, S. & C.	19
McKay, Jas. & Co.	18	Pancoast & Maule.	49	Shubert & Cottingham.	93	Washburn & Moen Mfg. Co.	4
MacKellar Fdry. Facing & Supply Co.	29	Parry, Mfg. Co.	82	Shultz Belting Co.	1	Washburn Shops.	51
McKinney Mfg. Co.	89	Passaic Art Casting Co.	3	Sibel, Geo. H. & Co.	60	Waterbury Brass Co.	2
McKinnon Dash & Hdw. Co.	94	Passaic Rolling Mill Co.	22	Sibley & Ware.	46	Waterbury Farrel Foundry & Ma-	
McLean, John.	38	Paxson, J. W. & Co.	29	Sickles, Sweet & Lyon.	75	chine Co.	38
McLeod & Henry Co.	28	Peabody & Parks.	87	Sidney Steel Scraper Co.	99	Waterbury Machine Co.	49
McNab & Harlin Mfg. Co.	35	Peck, A. G. & Co.	110	Sigourney Tool Co.	45	Watson & Stillman.	44
Machinists' Supply Co.	60	Pedrich & Ayer.	42	"Silver Finish".	5	Webster, Warren & Co.	34
Mackay, Jas. T.	35	Penna. Diamond Drill & Mfg. Co.	37	Silver Mfg. Co.	47	Weiland, Chas.	62
Mahoning Foundry & Machine Co.	32	Pennsylvania Mch. Co.	59	Simonds Mfg. Co.	72	Weilman Iron & Steel Co.	17
Mahoning Valley Iron Co.	22	Pennsylvania Steel Co.	21	Singer, Nimick & Co.	23	Wells Bros. & Co.	51
Main Belting Co.	40	Perry, W. H. & Co.	61	Skelly, J. W. & Son.	92	West Coxsackie Iron Fdy.	24
Mann, Edwin R. & Co.	18	Philadelphia Drop Forge Co.	27	Skinner Chuck Co.	50	Western Wheel Works.	83
Manning, Maxwell & Moore.	52	Philadelphia Engineering Wks.	29	Smith & Egge Mfg. Co.	51	Watson & Stillman.	44
Manville Machine Co., E. J.	57	Phillips, E. & Sons.	13	Smith, H. D. & Co.	95	Wetherell Bros. & Co.	19&23
Mansfield, H. H.	60	Phillips, Townsend & Co.	11	Smith, J. D. Foundry Supply Co.	29	Wetherhill, Robt. & Co.	109
Maris & Beekley.	55	Phoenix Horseshoe Co.	95	Smith, J. D. Friction Drill and Tool Co.	51	White, L. & I. J. Co.	77
Maslin, J. & Son.	38	Phoenix Iron Co.	17	Smith, Oliver A.	98	White Mt. Freezer Co.	67
Mason Regulator Co.	109	Phoenix Iron Works Co.	37	Smythe, S. R. Co., Inc.	31	Whitehead Bros. Co.	29
Mast, Foos & Co.	71	Phosphor Bronze Smelting Co.	3	Sommer's Son, John.	110	Whitlock Coil Pipe Co.	34
Matthai, Ingram & Co.	1	Pickands, Brown & Co.	21	Southwark Foundry & Machine Co.	36	Whitlock, Wm.	50
Matthiessen & Hegeler Zinc Co.	2	Pierson & Co.	24	Spidel, J. G.	55	Whitman & Barnes Mfg. Co.	74
Maurer, H. & Son.	28	Pike Mfg. Co.	56	Speirs, J. C. & Co.	25	Whitney, A. R. & Co.	18
Mayhew, H. H. Co.	80	Pilling & Crane.	18	Spencer's I. S. Sons.	27	Whitney, A. & Sons.	22
Merrill Bros.	18	Pittsburgh I. & S. Eng. Co.	30	Springfield Brass Co.	38	Whitton, D. E. Mch. Co.	50
Merrill Mfg. Co.	48	Pittsburgh Mfg. Co.	43	Springfield Emery Wheel Co.	56	Wickwire Bros.	7
Merriman, A. H.	44	Pittsburgh Reduction Co.	66	Standard Fdry. & Mfg. Co.	27	Wilcox & Howe Co.	92
Michigan Emery Wheel Co.	56	Place, Geo.	61	Standard Horse Shoe Co.	94	Wild, A. L.	87
Miles, F. S.	13	Plumb, Fayette R.	78	Standard Lighting Co.	84	Wiley & Russell Mfg. Co.	49&110
Miller & Van Winkle.	4	Poole, Robt. & Son Co.	37	Standard Steel Casting Co.	110	Wilkie, Bothwell & Co.	30
Miller Lock Co.	91	Pope Mfg. Co.	67	Standard Tool Co.	52	Williams, J. H. & Co.	96
Millers Falls Co.	68&110	Popping, J.	65	Standard Tool Co.	69	Williamson, C. T. Wire Nov. Co.	109
Milne, A. & Co.	20	Port Chester Bolt & Nut Co.	102	Stanley Rule & Level Co.	109	Williamsport Wire Rope Co.	6
Milton Mfg. Co.	101	Portsmouth Wrench Co.	95	Stanley Works.	67	Wilmot & Hobbs Mfg. Co.	1&3
Miner & Peck Mfg. Co.	45	Pottstown Iron Co.	20	Stark Moh. & Tool Co.	44	Wilson, E. H. & Co.	18
Mohr, J. J.	18	Pottsville Iron & Steel Co.	17	Starrett, L. S.	75	Wilson, John.	76
Moline Elevator Co.	55	Pratt & Whitney Co.	44	Steam Gauge & Lantern Co.	68	Wilson, J. Fred.	101
Monce, S. G.	74	Prentiss Tool & Supply Co.	59	Stearns, E. C. & Co.	66	Wilson, W. A.	44
Montour Iron & Steel Co.	22	Prescott Vise Co.	70	Steel & Iron Improvement Co.	66	Winslow, Sm'l., Skate Mfg. Co.	84
Moore, Dr. Gideon E.	66	Presbrey Stove Linning Co.	28	Stepto, J. & Co.	61	Wire Goods Co.	6
Moore Mfg. & Foundry Co.	64	Pullman, J. Wesley.	23	Strombergh, J. H. & Son.	102	Wister, Francis.	27
Moore & White Co.	55	Pullman Sash Balance Co.	91	Stover Novelty Works.	48	Wister, L. & R. & Co.	22
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Moorhead-McCleane Co.	23	Queen Anne Screen Co.	87	Stow Flexible Shaft Co.	52	Wolcott & West.	62
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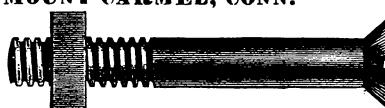
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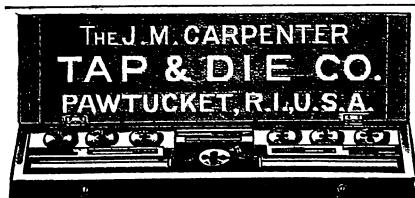
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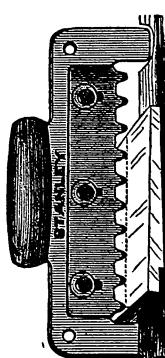
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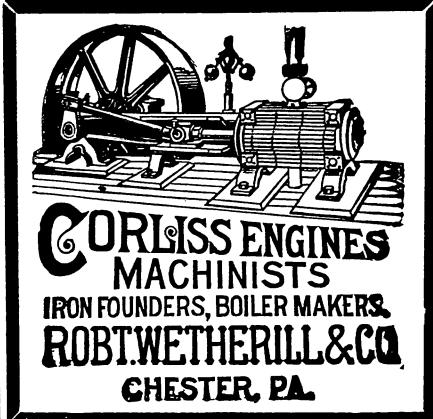
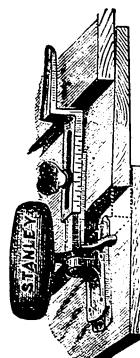
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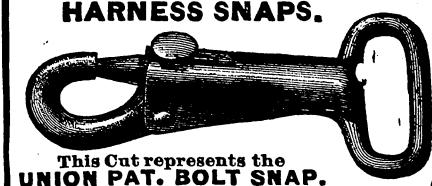
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THE IRON AGE

THURSDAY, JUNE 22, 1893.

Manganese Steel Wheels.

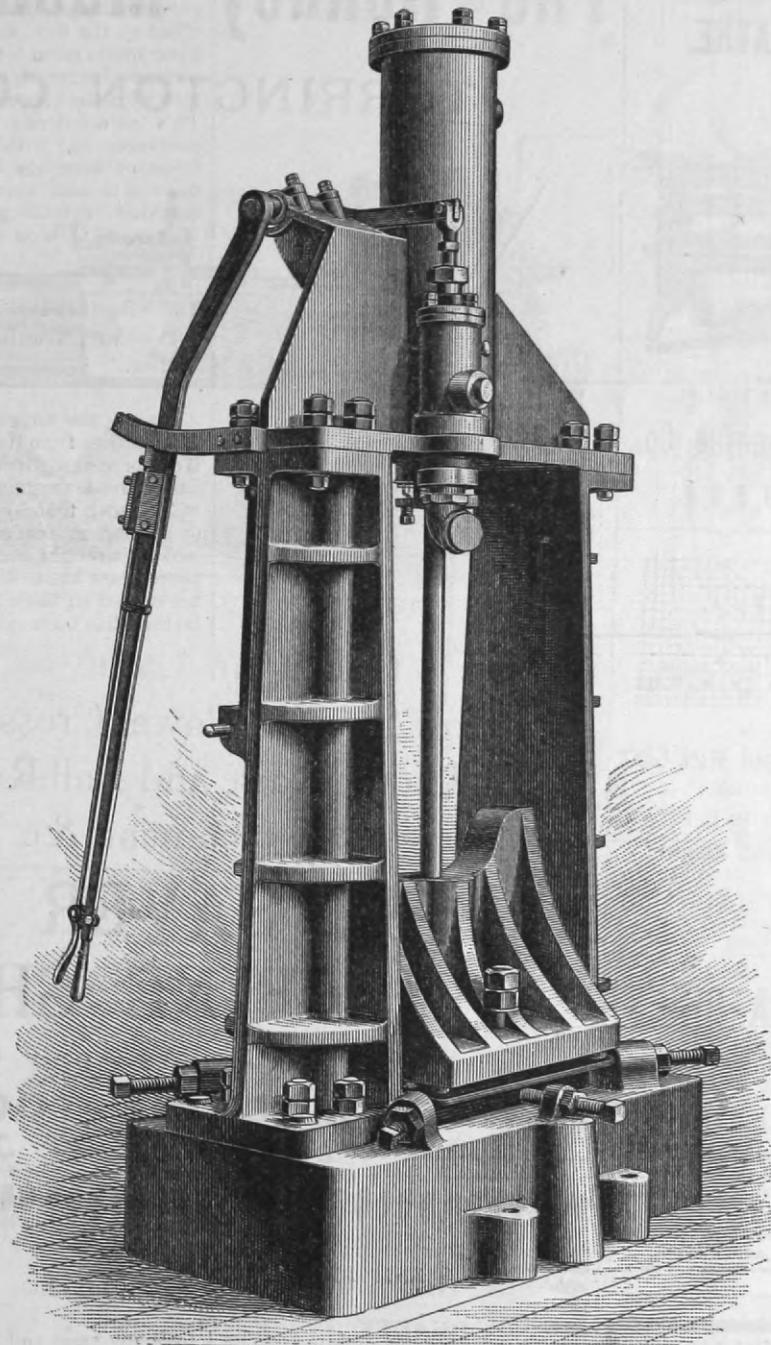
After a long series of experiments carried on by the inventor, R. A. Hadfield of Sheffield, supplemented by themselves, the Taylor Iron & Steel Company of Highbridge, N. J., are making car wheels of Hadfield's high manganese steel, water toughened. As is well known to many engineers, through the writings of the inventor and otherwise, the peculiarities of this steel when water toughened are strength combined with extreme hardness and toughness. But as it is not practicable to tool it, the chief difficulty was to arrange to bore the hub for the axle. This has been overcome by casting the wheel around a large thin wrought-iron bushing, which does not put any strain on the wheel in casting. This is bored out and a heavy soft steel bush turned to fit it is pressed in under 40 to 50 tons pressure to a shoulder on the flange side. This bush is then bored to suit the axle. In this way hard manganese wheels are fitted to axles as readily as any others. The tests show great strength. The wheels have been dropped edgewise from a height of 30 feet on a 2500-pound anvil block each many times upon the same point in the circumference without effect other than to bend and batter the flange till it was flush with the tread. It also requires from 40 to 50 blows of an ordinary car-wheel drop, weighing 1120 pounds, falling 12 feet, to knock the hub out of a manganese wheel. A cold-weather test was made, when the thermometer was below zero, by laying the wheel on the ground, flange down, and striking the flange 150 blows at one point with a 20-pound sledge, without effect except to bend the flange. Expansion and contraction tests, made by pouring a ring of molten cast iron $1\frac{1}{4}$ x 4 inches around and against the tread of a wheel, leaving it

on for 15 minutes (making a much more sudden and higher heating of the rim than it is possible to get in service from brake friction) then suddenly removing it, produced no effect on either plate or spoke wheels. A good deal of success has attended the introduction of manga-

The Vulcan Steam Drop Press.

For many purposes in the stamping and forming of sheet metals the lifting of the drop by direct steam pressure is preferable to the use of the purely mechanical movements ordinarily employed for the purpose. This is particularly true in case of large work requiring deep dies and heavy drop, though for any purpose the ease of manipulation and the perfect control of the force of each individual blow may be considered as qualities of very considerable importance. The machine illustrated by the accompanying engravings is of an entirely new design, the primary object in which was to obtain the greatest simplicity of construction compatible with durability and efficiency of operation. The steam cylinder is, of course, single acting, as its only function is that of lifting the drop, the weight of which and the height of fall determining the force of the blow, though the latter may be somewhat modified by working the valve to cause an early exhaust closure and cushioning on the remaining steam. As seen in the drawings, the actuating portion of the machine is very similar to that of an ordinary steam hammer. In fact, in the construction throughout the only essential points of difference are in the single-acting feature; the absence of automatic valve gear, and the modified type of housing and base rendered necessary to enable the use of dies of

large size. In the machine illustrated, which is the only size of this design yet built, the drop head and base will accommodate dies of 24 by 24 inches. The steam cylinder has a bore of $8\frac{1}{2}$ inches and piston stroke of 30 inches. Referring to the drawings, Fig. 2 shows a front elevation in which the cylinder and a portion of the drop head are shown in



THE VULCAN STEAM DROP PRESS.

vertical mid-section. The position of the piston is at the limit of the lifting stroke, and directly below it is the connection for a 2-inch relief pipe, by means of which the steam is released instantly after the piston passes the opening when working full stroke. The effect of this release is twofold. It prevents the piston from traveling too far and striking the cylinder head, and also permits it to drop without releasing, by means

The quantity and distribution of the metal of the housing appear to be well calculated to resist the strains to which they are subjected; and the method of securing to the bed and cylinder base affords a perfectly rigid construction. The guides are bolted to the legs, and are adjustable to compensate for wear, which the accurate registering necessary for die work renders important. The bed, or base block is cast solid, with

that the rod is provided with a rounded or hemispherical end, which is seated in a shoe or step of corresponding shape, and the latter cushioned on a block of wood, parallel with the fibers of the latter. The hole in the head is $2\frac{1}{4}$ inches in diameter, and as the rod is $1\frac{1}{8}$ inches, there is a clearance of $\frac{1}{2}$ inch. The key, of course, bears on the lower side of the slot in the rod, and on the upper side in the head, and ample clearance is allowed in each, on the slack side. Hence, it is clear that at the instant of blow, the momentum due to the weight of the piston and rod, must be absorbed or cushioned upon the wooden block, and that any compression of the latter can have no effect on the key, as both key and rod have ample room for downward motion without danger of resistance from contact with the opposite side of the slot. This feature is one of considerable importance, as, with rigid connection, frequent breakage is imminent, unless the rod is made excessively heavy. The machine is built by the Vulcan Iron Works, 86 Clinton street, Chicago.

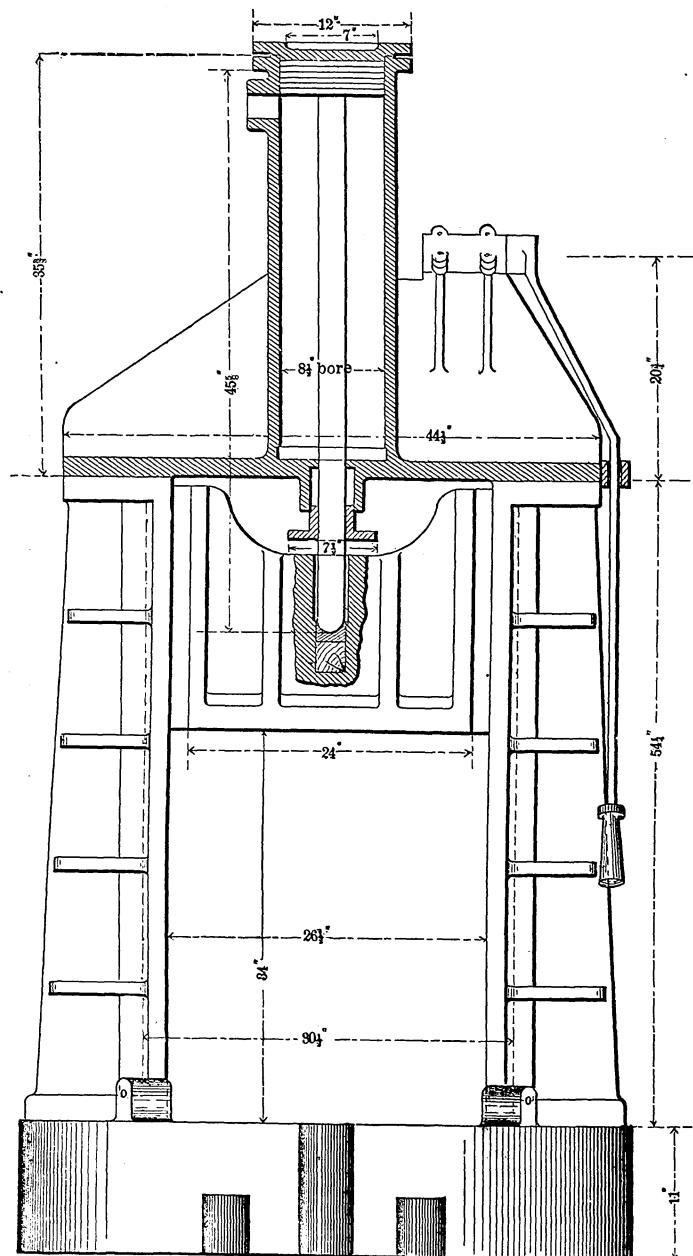


Fig. 2.—Sectional Elevation.

The Bertrand Process for Rust Proofing, Tinning and Enameling Iron.

Among the various means in use to protect iron from oxidation the Bower-Barff process, or some modification of it, has proved the most successful. It is well known that by this process a coat of permanent magnetic oxide is deposited on wrought and cast iron which, if proper care has been taken, will protect the coated surfaces for all time. This method has been in use in this country

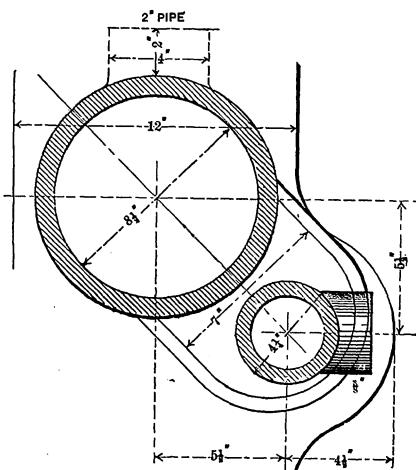


Fig. 3.—Cross Section, Cylinder and Valve Chest.

THE VULCAN STEAM DROP PRESS.

of the valve, though the latter is necessary to prevent cushioning, in case it is desired to strike the full blow. The perspective view shows the position of the valve chest with relation to the relief nozzle. Fig. 3 is an enlarged transverse section of cylinder and valve chest—the boss on the side of the valve chest being the steam connection, while that at the bottom is the exhaust; and the latter, therefore, serves as a very efficient means of freeing the entire steam spaces from accumulation of condensation water, as it drains by gravity alone as soon as the exhaust opening occurs.

the necessary lugs for holding down bolts and die-adjusting screws. Its dimensions are 51 by 26 inches, by 11 inches thick, the weight being over 3800 pounds. The large bearing area on the foundation is very effective in distributing the shock of the blow. Figs. 4 to 7 show the construction of the drop head, the most important feature of which is the device for connecting to the piston rod, by means of which all risk of breakage of the latter, from crystallization caused by the continual shock, is prevented. The arrangement is shown in the enlarged part section, Fig. 7, in which it is seen

for many years and has given very satisfactory results, but owing to the necessity of a rather costly special form of furnace and the limited output of such furnace, its use has been restricted and has never reached the development that a cheap and rapid method of producing a coating of permanent oxide upon iron articles of any size or weight should have reached.

Researches in this direction have been going on for some time, and lately Pierre Henry Bertrand of Paris has brought out a new process by means of which iron can be coated with magnetic oxide rapidly, cheaply and effect-

ively, in any furnace of ordinary construction. M. Bertrand discovered the fact that, when an iron article previously coated with a thin layer of a volatilizable metal or alloy is heated to a temperature at which the metal or alloy is volatilized, the protection afforded by this layer prevents the free access of oxygen to the iron surfaces, and the resulting oxide, instead of being a sesquioxide, or Fe_2O_3 , is a magnetic oxide, or Fe_3O_4 , of a fine blue slate color.

M. Bertrand, perceiving that the ultimate success of his process depended upon a cheap and rapid way of placing upon the surface of the articles to be blued the first thin layer of alloy, developed a new method by which this can be done in a few seconds. It consists in the preparation of a bath or

coating the inside of cast-iron cooking utensils, which are thus kept from oxidation and preserved from the usual inherent iron taint.

Further experimenting with articles coated with magnetic oxide by his process led M. Bertrand to discover a very cheap method of covering such articles with a layer of enamel, which may be varied in design and color, as enamels usually are. The interesting part of this method is that any article of cast or wrought iron or steel may be enameled in any color at one single firing. Articles thus doubly coated with the magnetic oxide and enamel are absolutely non-conductors of electricity, and this property has led to their use in various electrical devices, such as parts of dynamos, isolating

WORLD'S FAIR NOTES.

The Increasing Attendance.

The fair is proving its power as an attraction, and the figures of attendance are climbing up to the huge aggregates prophesied by its enthusiastic promoters. June has shown up remarkably well. In the first 15 days the total number of paid admissions was 1,200,000. That is an average of 80,000 per day. This beats all records in America, and in point of numbers nearly equals the paid attendance of the cheap admission exposition of four years ago in Paris, as it outdoes even Paris in amount of money taken at the gates. This result, compared with the Centennial Exposition attendance, during the same period, will show how great a popular success the Columbian enterprise is.

The whole of June gave the Centennial only 695,000 paid admissions, or but little more than one-half the number at the Columbian in the first half of the same month.

The daily average at the Centennial during the first 15 days of June was less than 27,000, against 80,000 at Chicago.

Already at Chicago during June there have been two days with an attendance far above 100,000 and a third day with a number of admissions but little below that mark, the three days together showing nearly 400,000 paid admissions. During the whole of June at Philadelphia not one day returned an attendance as great as 40,000, and only five days in the month exceeded 30,000.

Not only is the Columbian Exposition showing high figures, but the average is constantly increasing. It is a great, popular movement that gathers momentum as it marches along. The first seven days of the month showed a daily average of 58,500 paid admissions, while the remaining eight days of the half month showed a daily average of very nearly 100,000.

The Ferris Wheel.

The great Ferris wheel, which is intended to rival the Eiffel Tower as a mechanical curiosity, was tested on the 15th inst. At 6.30 p.m. the newspaper representatives and engineer corps of the company who had assisted in the construction, took their seats in the first car. In the second car to pass the landing was a party of ladies. Capt. Robert W. Hunt, president of the Ferris Wheel Company, was in direct charge of the arrangements.

Without jar or jolt when the power was applied, says the *Chicago Herald*, the great circle of steel began to revolve, and though but little was said by the adventurous travelers, it was evident from the expressions on some faces that they would have been perfectly satisfied to have discontinued the trip then. As the car rose and the view expanded, all thought of danger was overshadowed by the magnificent spectacle spread out before them. Midway Plaisance was crowded as never before and resembled a long, black stripe through a field. When half the circumference had been made the cars were brought to a stop at a distance of 260 feet from the ground. Cheers were given by all, and in bumper of champagne the success of the enterprise was drank. Though the atmosphere was somewhat hazy from the recent showers, the view was superb. Jackson park and its buildings were almost dazzling

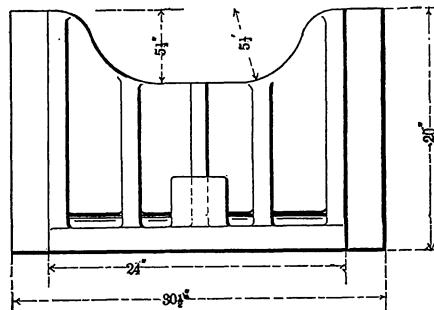


Fig. 4.

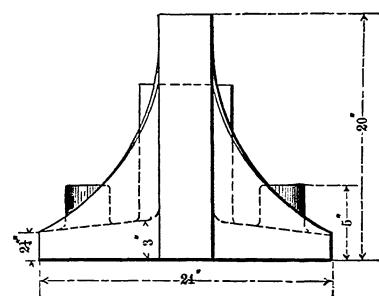


Fig. 5.

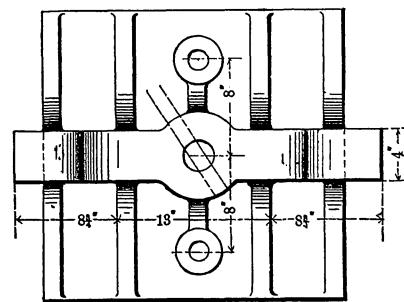


Fig. 6.

The Drop Head.

THE VULCAN STEAM DROP PRESS.

mixture in which the salts of the metals to be deposited are dissolved. Upon simply dipping the articles in this bath, without the aid of electricity, the metals of the salts are quickly precipitated upon the surfaces, so that the whole operation of alloy, coating and oxidizing is completed in 30 to 40 minutes. No special furnace is needed, and all that is wanted to form the coat of oxide is a stay of about ten minutes in an atmosphere of about $1000^{\circ}C$. With proper charging arrangements the furnace can run continuously at the rate of two charges an hour. The operation is very simple and requires no specially trained men, so that the process can be installed in any foundry at a trifling expense.

Pursuing the problem of coating articles with a thin layer of volatilizable metal or alloy a little further, M. Bertrand has succeeded in causing a durable coat of tin to be deposited on cast iron. The method is simple and inexpensive and is used extensively now in

plates, conduits, &c. The oxide coating and enameling occupy less than an hour.

These processes have been in practical use at M. Bertrand's works in Paris for nearly two years, and the results have proved highly satisfactory. The usual products of the works are blued and tinned cooking utensils, blued and enameled soil pipes, enameled parts of electrical devices, blued railings and stable fittings, enameled mantel pieces to imitate various marbles, blued and enameled drinking fountains, &c. The pipe foundry at Pont-à-Mousson, the largest of the kind in France, has acquired the right for bluing and enameling gas and water pipes, and the cheapness with which these operations can be carried on bids fair to develop a large trade, not only in that line, but in the coating of all iron exposed to the weather. M. Bertrand has an interesting exhibit at the Columbian Exposition in the French section of the Electricity Building.

in whiteness and every outline could be distinguished. Clouds prevented seeing the shores of Michigan or Indiana, but Lake Calumet was clearly outlined. The Hyde Park cribs stood out clear cut like a mirage in the green waters of the lake and the surface of old Michigan appeared to be on a level of the wheel top. In the misty haze a mirage of the cribs could be plainly seen and attracted much attention. After a short stop the journey was continued and in 30 minutes from the time of starting the party had completed the circle, well satisfied with its successful termination. Regular trips of the wheel will be made hereafter.

The Long & Allstatter Company

of Hamilton, Ohio (Section 28, Column L-46), exhibit a number of the larger sizes of metal punching and shearing machines. These are of the most recent designs and embody some important improvements. Although the line of machines of this class built by the company comprises about 350 regular styles and sizes for both belt and direct steam power, the display includes only those of the former type. The most conspicuous object in the exhibit is a heavy multiple punching machine for punching at a single stroke a row of any desired number, size and spacing of holes (within the capacity of the machine), and at the same time straightening the plate edgewise. The punches and dies are arranged in gangs and held in such manner as to admit of their being readily adjusted for the required spacing, whether the latter be of regular or irregular distances between centers. While the dies are, of course, set in line as to height, the arrangement of the punches is such that their simultaneous engagement and consequent excessive strain is avoided. The original method employed was to make the punches of graduated lengths, so that the line of points tapered both ways from center to outer ends, thus giving an effect with respect to the combination of a shearing cut in which the engagement of the two leading punches in the center was followed successively by those next in order on each side until completion of the stroke. In the details of such an arrangement, however, there are obviously some serious objections. It was necessary to have a full set of punches of the different lengths required for making the combination for the closest spacing, which, on tank work, for instance, would mean some twenty or more lengths.

To obviate this difficulty the plan was adopted of tapering the seat or bearing for punch heads by making the holders of the necessary difference in length, whereby the punches are of uniform length, and may be used indiscriminately in any position in the gang. The machine shown is set for punching rivet holes in boiler plates—there being 36 punches, spaced 2 inches between centers—thus punching a plate 6 feet long at one stroke. The edge-gripping and straightening device is very powerful, being actuated by a series of five toggles, connected by continuous links to a rock arm at the left-hand end of housing. The design of the machine is such that the working strain is supported by the two end housings, leaving the entire width of space back of the head open for the passage of plates of any length, not exceeding 72 inches in width. The depth of throat admits of punching 6 inches from edge of plates or bars of any length. A decidedly novel machine is shown, in the shape of a revolving double angle-bar shear.

Its construction is substantially similar to that of the regular pattern of machine made for this work—the peculiar feature being that it is provided with a revolving base or turn table, by means of which it may be rotated to face in any desired direction without interfering with the driving mechanism. The latter consists simply of a central vertical shaft driven from countershaft by a pair of miter gears, and, by the same means, transmitting the power to the driving or pinion shaft—the driven miter gear being in place of the pulleys used on the stationary machine. As an illustrated description of the device will be given in these columns, further reference to it in this connection is unnecessary. Another important feature of the exhibit is an exceptionally large single punching machine. It is of a regular size and pattern, and is designed for the heaviest class of marine boiler and bridge work. Notwithstanding the fact that it has a depth of throat of 60 inches, its capacity is for punching a $2\frac{1}{2}$ -inch hole in $1\frac{1}{2}$ -inch plate.

The design of housing of this machine is admirable, the distribution of metal being such as to afford, as nearly as possible, uniform strength and stiffness in all parts subjected to the tremendous working strain. The usual side bolts are provided for relieving the housing of unnecessary strain when doing heavy work on narrow material or close to edge. The die holder in the lower jaw is of the beak form and admits of setting punch and die further out for punching flanges of boiler heads, &c. For ordinary work the punching tools are set more nearly in center line of head. Another deep-throated machine is shown of same general design, but for lighter work. There is also a horizontal punching machine of capacity for $\frac{1}{2}$ -inch hole in $\frac{1}{2}$ inch plate or bar. It is of admirably simple design and conveniently arranged for operating. The beak jaw admits of working very close in corners of flanges, angles and other structural shapes. The driving mechanism consists of a vertical crank shaft carrying a large spur gear, the driving pinion of which receives its vertical rotation from the flywheel shaft, by means of miter gears. Between the large gear and the upper bearing of shaft is the operating clutch, and located just above the released position of the latter is a bevel gear, which, in connection with a pinion and large band wheel, serves to rotate the shaft for moving the head by hand in setting the punch and die and centering the work for accurate punching.

Several other machines of the different styles and sizes are shown, of which no special mention need be made. All of the machines exhibited, as well as all now built by the company, are provided with a recently improved form of operating clutch mechanism, embodying an automatic release and a safety stop, both of which are extremely simple in construction and reliable in operation. Upon the face or periphery of the sliding clutch, and centrally located with relation to the crank pin, is an adjustable cam piece of double wedge form. Directly over the position occupied by the cam when the clutch is engaged is a vertical bearing carrying a stout plunger. The latter, through a system of levers and rods, is connected to the treadle and hand levers by which it is raised clear of the cam simultaneously with the motion engaging the clutch. As soon as this is effected the treadle is released, which allows the plunger to drop into its lower or normal position, in which the end just clears the face of

clutch. By continuation of the motion of shaft, after the cam reaches the plunger and at the instant the up stroke is completed, the clutch is forced back into the released position; while at the same time a stop drops into the locking position with the first clutch lever, and holds the latter securely until disengaged by the next movement of treadle or hand lever.

A. D. Quint.

In Section 28, Column J 43, is shown a single specimen of Quint's six-spindle turret drilling machine, which, it is claimed, is the only form of turret machine now in use in which the cutting is done by revolving the tools—in all others the work revolves while the turret tools remain stationary. The machine in question is of the "sensitive" type and intended for drills, taps, &c., from the smallest sizes up to $\frac{1}{2}$ inch. Its special mission is to perform the work of the multiple spindle drill. In using the latter, the piece to be operated upon must be moved after each operation from one to another of the spindles in turn, and therefore, the table must be made long enough to accommodate such manipulation. With the turret machine, a table of equal capacity would be about one third the length, and the work placed on it so as to bring the part to be operated on in the central position, when it may be clamped if desired, while the several operations, up to six in number, may be performed by bringing the tools to the work. In other words, instead of "bringing the mountain to Mahomet, Mahomet is brought to the mountain." Of course, the advantages of this reversal of manipulation are much greater in comparatively large work where the size and weight of the piece to be handled is proportionately such as to involve danger of breakage to very small drills, taps, &c., unless the position is very carefully adjusted at the expense of an expenditure of considerable time, to say nothing of the greater amount of skill required in the operator.

Very small pieces will readily center themselves if brought approximately into the required position, hence the advantages are not so great as in the former case. In construction, the Quint machine is exceedingly simple, and contains several admirable features affecting its sensitiveness and ease of operation, as well as its exceptional degree of efficient durability. From the small size of the turret, it is difficult to imagine from an exterior view that it can contain the requisite mechanism to enable the several spindles to start and stop, automatically, according to their relative position with the center of table. A glance at the internal economy, however, suggests either that one is very stupid not to have thought it out, or else that the designer is deserving of great credit for his ingenious simplicity. Briefly described, it is as follows: A horizontal driving shaft carries at its outer end an ordinary three-speed cone pulley, while at its inner end is a rawhide miter gear. A second horizontal shaft, at right angles with the first, passes through a sleeve or hollow shaft to the front of turret. At the rear end, both shaft and sleeve are provided with miter gears which mesh—one on each side—with the one on driving shaft, and are, therefore, made to revolve in opposite directions. Within the turret, on the ends of both sleeve and shaft, are similar beveled friction wheels, the lateral positions of which are equidistant from the plane of axes of the six radial spindles. Each of the

latter carries a vulcanized fiber friction wheel, beveled to match the angle of those on shaft and sleeve. The journal bearing carrying the shafts is turned externally to form the bearing upon which the turret revolves, and is slightly eccentric with relation to its bore, the center being above that of the latter. By rotating the turret, it is obvious that so soon as one of the spindles assumes the nearly vertical position between the opposite revolving disks, the friction cone will come in contact with them and be driven from both sides. If the motion of turret be continued in the same direction, the cone will pass from the point of contact, and the motion of spindle will cease.

Each spindle in turn will thus be driven when brought around to the work. It is immaterial as to the direction in which the turret is revolved, as the friction wheels engage and release with equal facility either way. The indexing of turret is accomplished by means of a stout steel stop or bar accurately fitted in a long bearing, and which by spring pressure is made to engage the taper index holes in turret head corresponding with the working position of the several spindles. The release is made by depressing a small treadle conveniently located. By means of suitable collars the amount of driving friction can be very delicately adjusted, so that the motion will stop instantly in case of undue resistance, even of the smallest tool from any cause which would otherwise involve risk of breakage. It is readily seen that, from the wedging effect of the spindle cone between the two friction disks, the more feed pressure there is applied to the drill the greater will be the power of the drive (within the limit of the belt power, of course), and also that by allowing a very slight amount of lost motion between the adjusting collars the drop of spindle, as the point of drill goes through in drilling through holes, will stop the motion at once and obviate this very fruitful source of breakage. The countershaft is provided with a pair of friction clutches by means of which the drive in either direction is obtained, and in case of tapping or similar work requiring a change of motion effect an instant reversal. Any desired changes of speed between 250 and 2000 revolutions of spindles can be instantly obtained without stopping the machine or changing the belts. This is accomplished through a pair of long conical friction drums on counter, which are brought into frictional contact by a leather ring running loosely between them.

The position of the ring with reference to the length of cones is regulated by the shifter, and the changes of speed correspond with the relation between the diameters of driver and driven at point of contact. An adjustable depth gauge is provided for each spindle. In the regular machines the spindle sockets are reamed to the No. 1 Morse standard taper. The feed motion, as in most sensitive and multiple drills, is applied by a treadle and hand lever, used for raising the table. The latter has a large range of vertical adjustment, by rack and pinion motion; also the ordinary means for revolving and radial motions are provided.

The Gisholt Machine Company.

In Section 28, Column K-49, are exhibited six different styles and sizes of the Conradson turret lathes, built by the Gisholt Machine Company of Madison, Wis. As a very fully illustrated description of these machines was given

in *The Iron Age* of December 22, 1892, it is unnecessary to repeat it in this connection. Unfortunately for the credit of the display, the amount of space obtainable was far short of that specified in the application, and is so entirely inadequate to a proper arrangement of the machines that they are greatly crowded, and leave barely enough room between them for the operators to stand. Detailed inspection is therefore difficult, and is only attempted by those visitors who are specially interested in this class of tools. The machines are in all respects similar to those regularly built for customers, no attempt at extra finish or modification of any kind having been made. The exhibit comprises one 13-inch swing brass-finishing lathe; one 3 and one 2 inch screw machines, one 42 and one 28 inch gap turret lathes and one 34-inch and one 24-inch standard turret lathes. The screw machines, so called, are in reality different from the standard turret lathe in being without the slide rest provided with the latter. Their specified sizes indicate that they have a capacity for making machine screws, studs and similar turret work from the solid bars of merchant lengths and 2 and 3 inches diameter respectively. This is claimed to be the heaviest work of this description ever accomplished. The machines are provided with automatic chucks and wire feed. The brass-finishing lathe may be properly termed "universal," as it is designed to do all the work of the ordinary engine and Fox lathes, as well as the large variety performed ordinarily by the turret tools. With the exception of the gap bed, the 48 inch gap lathe is similar to the standard machines. All of the latter are triple geared and have a capacity for the heaviest character of work. Each turret is equipped with a full set of tools for performing six operations at one setting of the work, the selection of which is of a character which will best illustrate the Conradson system of adapting the turret to such operations as heretofore have been universally done by the engine lathe. So far, the machines have not been put in full operation owing to unavoidable delays in various essentials. As, however, Mr. Conradson is giving his personal attention to the exhibit, it is expected to have the machines at work in a few days, when doubtless their astonishing performance will attract attention from all classes of visitors, and especially from those engaged in any line of mechanical work.

The Dake Engine Manufacturing Company

of Grand Haven, Mich., exhibit a number of the Dake double reciprocating square-piston engines of several styles and sizes, each of which is arranged to illustrate some special application of this simple and compact form of steam motor. Although of a type usually classed as "rotary," the designation is not strictly correct, as the motion of the piston or its equivalent in a rotary engine is continuous in one direction, as is that of the shaft, while in the Dake engine it is reciprocating, and rotates the shaft by means of a crank. Briefly stated, the essential features of the machine consist of an inner and outer sliding box-shaped piston, the former of which contains a centrally located crank-pin bearing, and four tangential openings of peculiar form, which act, alternately, as the steam and exhaust ports. The crank shaft is carried by a long bearing, which is central with the outer case or body of the engine, and is

provided with a stuffing box at its outer end. The steam is admitted through a central circular opening in cover of case, while a concentric annular passage releases the exhaust. The mechanical movement resulting from this arrangement of parts is precisely that of the well-known "crank yoke" and block, formerly extensively used with the ordinary reciprocating piston, for the purpose of dispensing with the connecting rod, cross head, &c. In the analogy, the yoke block represents the inner box or piston of the engine, and the yoke itself the outer one, while the yoke guiding device, of whatever form, is the equivalent of the external case of engine. Analysis of the motion shows that by a quarter revolution of crank the yoke block will travel, say, from the central to extreme outer position, vertically, while the yoke moves the same distance horizontally, but from the outer to central position. Continuing the movement to complete the stroke of piston, or half revolution of crank pin, the yoke continues to travel in the same direction to the opposite limit of its stroke, while the block returns to its central position. By the return stroke of piston, the yoke and block return to their original positions, after reaching the opposite limits of their travel. In the Dake engine the outer square piston is fitted to a steam-tight bearing with the case at the top and bottom, while the inner piston forms a similar bearing with the internal vertical surfaces of the outer one. Both are provided with adjustments for maintaining steam tight contact without causing unnecessary friction. Of the four ports in face of inner piston, two communicate with the spaces between the case and vertical sides of the outer piston. This, of course, necessitates a passage through the side walls of both pistons. The second pair of ports connect directly with spaces above and below the inner piston. By the complex motion, resulting from the travel of the two pistons, each of the ports is alternately brought opposite the steam and exhaust openings in the cover plate. The latter communicate by cored passages in the plate with the steam and exhaust pipe connections on top of case. The arrangement of ports is made to effect a steam cut off at five-eighths stroke, and the expansive action is, therefore, about equal to that obtained by the ordinary slide valve. As will have been noticed, the inner piston, with its port openings, constitutes the valve, the cover plate forming the seat, and the moving parts comprise only the two pistons and the crank shaft. This is certainly about the maximum of simplicity, while the liability to loss of efficiency from wear and tear must necessarily be very slight. The cost of construction is very small as compared with other types of engines, while the high rotative speed possible reduces the size of machine necessary for a given power to very small proportions. This is a great advantage as regards the application to many purposes requiring small power, and in some of these the engine is the smallest and least noticeable part of the combination. In most instances of special applications the engine is direct connected, and its form renders it easily adapted to almost any desired location. The exhibit comprises the following styles and sizes: One 15 horse-power reversing engine, arranged for variable speed, and for use as an independent feed for saw mill use. One 10 horse-power stationary engine, with fly wheel, mounted on bed plate, carrying out-

board bearing. There are also two smaller stationary engines of 5 and 2 horse-power, respectively, which are without the bed plate. A Buffalo

is centrally mounted on the spider carrying the shaft bearing of a 36-inch disk fan. This is direct connected and makes a very compact and convenient means of ventilation, as the small steam and exhaust pipes constitute the only connection necessary—the whole being, therefore, a self-contained device. A 12 horse-power direct connected hoisting engine and boiler are shown, mounted on a single bed plate. The engine is of the reversing pattern and drives the pinion shaft. A second engine of same size and pattern, together with a similar hoisting drum, are set on a bed plate, but without the boiler.

J. M. Ambrose, a mechanic of Youngstown, Ohio, has recently completed and sent to Washington a model for a torpedo boat that is expected to excel anything yet produced for rapid action on water. It is a double submarine boat with a capacity for carry-



Fig. 10.—Wrought-Iron Dagger Sheath, Sixteenth Century.



Fig. 11.—Portion of Wrought-Iron Window, German Renaissance.

ARTISTIC WROUGHT IRON.

pressure blower is shown, mounted on a special bed plate, upon which is also a 1 horse-power engine. The drive is by means of a pair of friction wheels for speeding the blower in relation of 4 to 1 of engine. A 2 horse-power engine

ing 12 large torpedoes and providing quarters for a crew of 12 men. By an ingenious device it can be quickly submerged and sent through the water at a very rapid pace. The boat is 65 feet long with a displacement of 40 tons.

Artistic Wrought Iron.

III.

The Renaissance.

During the centuries of which we have spoken, although some artistic work was, as we have seen, done in wrought iron, it was never produced in any very great quantity. For that we must come down to the time of general revival of European art during what is known as the "Renaissance," or new birth, which commenced in Italy in the sixteenth century. This awakening was mainly attributable to the influx of Greeks into Europe, after the downfall of the Eastern Empire, or the taking of Constantinople by the Turks. These men brought with them purer ideas of art and a refinement of taste with which they in large measure imbued the more receptive of the Western nations. The

smith's craft immediately felt the effect of this revival. In Italy, France and Germany the art of working artistically in iron was resumed vigorously, the guilds of armorers taking a prominent part in the advance.

The German Renaissance followed close on the heels of the revival in Italy. The towns of Augsburg and Nuremberg, Germany, were particularly noted for their artist workmen in iron, who, toward the end of the century, became famous all over the civilized world for their beautiful productions in this line. Handles for swords and daggers and articles of furniture and domestic use forged by them were much prized.

German Renaissance Work.

A good example of German Renaissance work in this direction is presented in the illustration, No. 10, herewith,

and that (No. 12) of a door in the center of a grille, of the same period, which still exists in one of the older German cathedrals. The latter object is a particularly characteristic example of the form which the art took during the first revival in Germany.

In short, throughout Europe the debased art and methods of the later Middle Ages, or Gothic style, now fell into disrepute and were succeeded by the more pure and graceful forms of the Renaissance period, from which we still obtain our best exemplars in the revival of to-day.

produced in large numbers under the new conditions.

Rivalry set in between the artisans of Italy, France and Germany, and in a lesser degree those of England and Holland, as to who should accomplish the best work. Wealthy patrons, royal and otherwise, vied with each other in their encouragement of the smith's art, in common with those of the painter, poet, musician or architect.

Artisans of the Renaissance.

The consequence of this encouragement was that work in wrought iron in the sixteenth and seventeenth



Fig. 12.—Door in Wrought-Iron Grille, Early German Renaissance.

ARTISTIC WROUGHT IRON.

which shows a sixteenth century scabbard for two poniards. The sheath is made in two parts, the ornamentation being hammered out with the utmost delicacy, and the parts then welded together. The example from which our cut is taken is still extant in the Imperial Museum in Vienna.

An improvement in the general tone of architectural iron work of this time can be seen in the fine and flowing lines and better artistic feeling of the screens and grilles of the early German Renaissance, as exemplified in the illustration (No. 11) of one corner of an old sixteenth-century window in Prague,

Wider Range of Manufacture.

The use of wrought iron, too, was now applied to a wider field of manufacture. Among the articles made of this metal, of which numerous examples are preserved, are locks, keys, door plates, hinges and knockers, enriched with ornamentation in relief, which show a grand stride to have taken place beyond the somewhat crude, though bold and promising, efforts of the earlier centuries. Tables, cabinets, stools, coffers, andirons and utensils of various kinds, besides candelabra, statuary and other objects of use and ornament, were

centuries reached the highest degree of perfection to which it has ever attained. Benveunto Cellini, the great Italian sculptor in metal, was not shamed to occupy himself with the fashioning of iron locks and keys, which were veritable works of the finest art. The decorated locks of this time are regarded to day as precious objects; and the keys, exquisitely wrought into figures and rich designs, are now greatly prized.

The chisel and graving tool were rather more used now in touching up and perfecting the forging, especially in the case of wrought iron



Fig. 13.—Wrought-Iron Key, German, Seventeenth Century.

articles of furniture, which, after being fashioned with the hammer, were often handed over to the sculptor or engraver for artistic completion. A host of European smith-artists of this period have left examples of their work which is unsurpassed in richness and beauty-of-form and design, especially in the form of grilles and screens. The welding process, however, which the smiths of former times practiced so dexterously for uniting the various parts of their work, especially in the grilles and screens, was now almost abandoned. Sheet iron, hammered out and riveted together, was generally adopted for ornamental work. The artisans of Milan and Venice have left much of this class of work which testifies to their skill and artistic merit.

Greek or Roman clown. In another the sides are composed of floreated scrolls, terminating in the head of a lion, boldly executed; while in a third the plate is in the form of the head of a satyr, from whose mouth is suspended the handle. All are bold in design and workmanship, possessing an individuality of their own. In the same English collection is a wrought iron latch of Italian seventeenth-century make which has given its design to a number of makers of modern hardware. The top part is in the form of a griffin's head, while the projecting tongue of the monster forms the lift of the latch. These and similar examples are widely distributed among museums and collections the world over, and may serve, if properly studied, to give the manu-

years of the reign of Louis XIV of France. This monarch was a man who, to quote a modern art critic, "united a real desire to revive true art feeling with a debased and voluptuous mind. Progressing with the rise and degradation of his court, one is struck with the gradual development of the Renaissance to a high pitch of perfection, and a gradual descent to a florid and meretricious travesty upon it. The reigning beauty in many cases exerted a marked influence on the work executed during her *régime*, and her original station in life might very easily be guessed from the decorations she indulged in. What is remarkable, however, is the originality and attractive character of most of the work."

Thus the art of the Renaissance

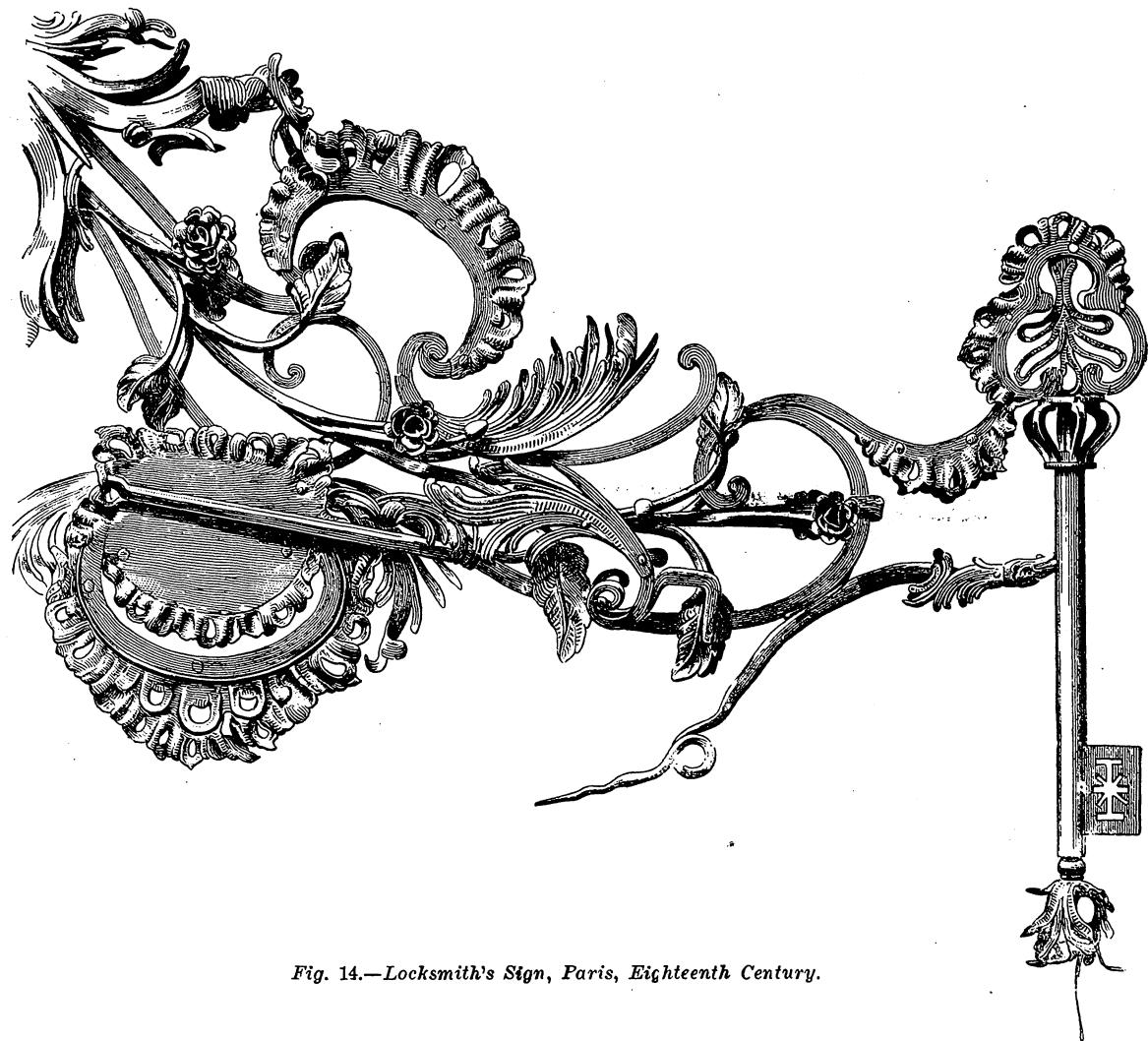


Fig. 14.—Locksmith's Sign, Paris, Eighteenth Century.

ARTISTIC WROUGHT IRON.

In France, too, much admirable iron work was done toward the close of the sixteenth century. Some beautiful specimens of the handicraft of the smith during this period are preserved in the Museum of the Louvre in Paris, which are correct in outline and graceful in form beyond anything of the kind previously produced.

Elaborate Locksmith's Work.

The sixteenth and seventeenth century door-knockers of Italian and Flemish workmanship are excellent in execution, and, though bold and even grotesque in design, possess an indefinable artistic charm which proves their true merit. Some of these knockers are to be seen in English collections. On one, the sides of the knocker represent dolphins at play, and the base or knocker proper resembles the mask of a

facturers of modern hardware new enthusiasm in the direction of artistic merit in the infinite variety of their productions.

In Fig. 13 is represented a wrought-iron key, now in the Imperial Museum in Vienna, which was forged and chased in Germany early in the seventeenth century, and which affords a good example of the beauty of such work, and of the general style of decoration with which these objects were treated at that time.

The locksmith's sign, now in the Museum of the Louvre, illustrated in Fig. 14, although of rather later style—Louis XV, Rococo—is a very elaborate specimen of the work in this line.

Louis XIV and Subsequent Decline.

The best art spirit of the Renaissance was at its height in Europe in the early

period yielded, in its turn, to that florid and grandiose style named after its most prominent patron "Louis XIV." The finer and more pure types which had marked the earlier years of his reign were superseded by a heavy, pretentious style evolved by the subservient artists of "the Great Monarch's" prolonged reign to meet his ideas of grandeur and lavish ostentation. The closing years of the reign of Louis XIV witnessed a production of decorative wrought-iron work on an unprecedented scale. Immense gates, stairways, balconies, screens, and other architectural objects of intricate and florid designs, according with the pompous style of the day and the court, still remain as witnesses of the decline of art. Some of them possess a certain grandeur, it is true, but the descent from the heights of the early Renaissance is marked in all of

them. They possess something earthly and sensual at their best

Louis XV and After.

This decadence continued into the reign of his grandson and successor, Louis XV, who has also had a style named after him. It is abundant in Europe and is marked by a tasteless profusion of meretricious ornamentation and a tendency to broad masses of heavy foliage, showing a return to the Rococo spirit. There are, however, occasional gleams of better things in

as indeed did the whole of Europe. In the United Kingdom especially the Georgian era was marked as a period of blunted artistic feeling, and the iron work produced there at that time and up to the middle of the present century is almost totally devoid of artistic merit. It is substantial and heavy, like the buildings and furniture of the time, with nothing pleasing about it. A good deal of this kind of work is still to be found in Boston and New York and some of the older Eastern cities of this country.

The Boiler Manufacturers.

The American Boiler Manufacturers' Association of the United States and Canada met in Corinthian Hall, Masonic Temple, Chicago, on Tuesday morning, 13th inst. President Philip Rohan of St. Louis delivered the opening address, in which he dealt on the benefits to be derived from the interchange of views among practical men. Henry Pratt, president of the local Boiler-

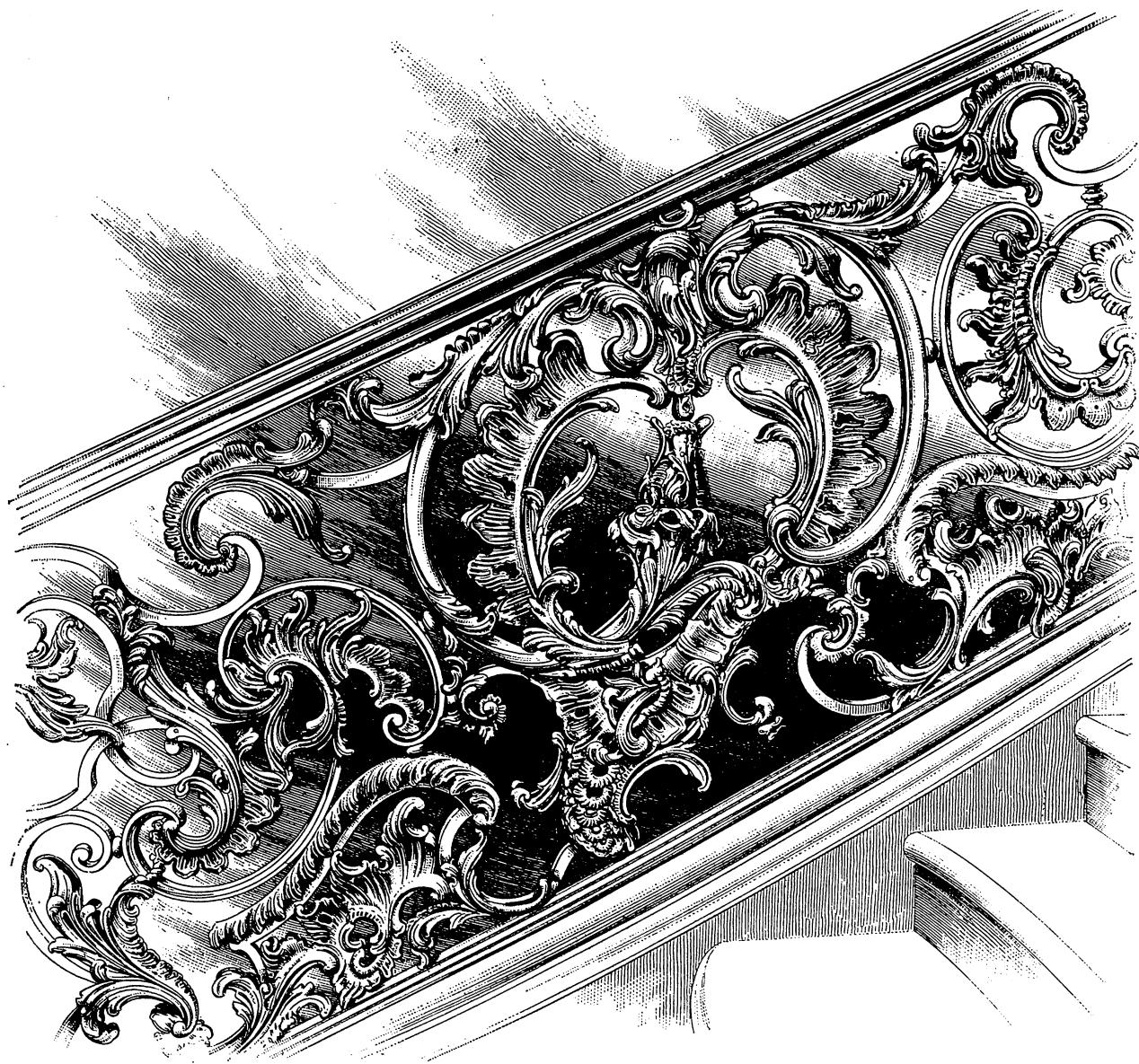


Fig. 15.—Stairway at Hotel de Ville, Nancy, Louis XV Style.

ARTISTIC WROUGHT IRON.

the more delicate work of this period, which is nevertheless in strong contrast to the clean cut, pure and virile type of the Renaissance.

The example of Louis XV Rococo, shown (Fig. 15) in the section of a staircase at the Hotel de Ville, in the town of Nancy, is a very favorable specimen of the art of this period, presenting its merits and defects alike. While having a certain grandeur, there is a jumbled-up appearance and an elaborate straining after effect with a flamboyant look which neither attracts nor satisfies an artist.

Both France and England in the latter part of the last century showed a marked decline in their wrought-iron work,

Indeed in Europe and America equally, it is only within the last 15 or 20 years that any marked improvement in the artistic quality of architectural and decorative work in wrought iron appears observable. What is being done in the United States in this matter will form the subject of our next article.

The firm of Cleveland & Hardwick, proprietors of the Erie Engine Works, Erie, Pa., have been incorporated under the laws of the State of Pennsylvania, and will hereafter be known as Erie Engine Works. Wm. Hardwick is president and F. F. Cleveland secretary and treasurer of the new company.

makers' Association, made an address of welcome to the visiting members, and referred to the preparations for their entertainment while in the city. The address in response was delivered by H. S. Robinson of Boston. The association held two sessions daily on the 13th, 14th and 15th inst. Committee reports were the main subjects of discussion, no formal papers being presented.

With regard to the specifications for steel adopted by the association in 1889, and known as A. B. M. A. steel, it had been found impossible to have these specifications copyrighted and that there was much difficulty in establishing uniformity among boiler con-

sumers on the grade of steel to be used. Gen. James A. Dumont, Supervising Inspector-General of Steam Boilers, was asked to state the opinion of Government officials as to the association's limit of the tensile strength of boiler steel to 65,000 pounds. He replied that his department favored the limitation, but that under the law steel up to 100,000 pounds test could not be rejected if it fulfilled the other requirements. A resolution was adopted that every member of the association shall endeavor to persuade all purchasers of new boilers to consent to the use of A. B. M. A. steel, that each shall display in his office a copy of the specifications and that each shall report the results of his efforts to the next annual meeting.

Important results had been expected from a test of the strength shown by different modes of riveting, which had been ordered under the auspices of the association, but the drums had not been completed in time. The committee having this matter in charge were directed to complete the test and to report to the association. This work is being done in Chicago and will probably be completed some time during the next four weeks.

A committee representing the Brotherhood of Boilermakers and Iron Ship-builders, consisting of P. J. Murray of Boston, James Alexander of Wilmington, Del., and H. J. Hickey of Chicago, appeared before the association to submit arguments in favor of a universal nine-hour day. An executive session was held to consider the subject, and it is understood that the decision was made that it would be inadvisable to recommend the adoption of the desired action, and that the members should be left free to settle the question in their respective localities as heretofore.

Officers were elected as follows for the ensuing year: President, John Mohr of Chicago; first vice-president, W. H. Fletcher of Hoboken, N. J.; second vice-president, H. S. Robinson of Boston; third vice-president, E. Leonard of London, Canada; secretary, E. D. Meier of St. Louis; treasurer, Richard Hammond of Buffalo. The association will hold their annual meeting next year at Boston on July 17 to 20, inclusive. The retiring president, Philip Rohan of St. Louis, was presented with a gold-headed cane bearing a suitable inscription.

The local Entertainment Committee, headed by Christopher Murphy of Jos. T. Ryerson & Son, provided the ladies accompanying the members of the convention with carriage drives about the city. They also furnished an elegant banquet on Wednesday evening, for which an elaborate menu was prepared. The speeches at the banquet were of an informal character, but were bright and witty and added no little to the enjoyment of the occasion. On Friday the members were driven to the World's Fair grounds in tally-ho coaches by way of the South Side boulevards.

The following is a list of those present, as nearly complete as could be ascertained:

W. T. Bate, Conshohocken, Pa.
Henry Brobst, Brobst & Heims, Grand Rapids, Mich.
Richard Garstang, St. Louis, Mo.
D. Grupe, Davenport, Iowa.
E. D. Meier, Heine Safety Boiler Mfg. Company, St. Louis, Mo.
Thos. Johnston, Johnston Brothers, Ferrysburgh, Mich.
Terence Kenny, St. Paul, Minn.
Emmett E. Baker and B. F. Baker, Kewanee Boiler Works, Kewanee, Ill.

Jas. Lappan, Lappan & Co., Pittsburgh, Pa.
E. Leonard, London, Canada.
R. Munroe, Pittsburgh, Pa.
T. L. McGregor, Milwaukee Boiler Company, Milwaukee, Wis.
J. Mathews, Harvey, Ill.
John O'Brien, John O'Brien Steam Boiler Works, St. Louis, Mo.
Philip Rohan, Rohan Boiler Mfg. Company, St. Louis, Mo.
H. S. Robinson, H. S. Robinson & Co., Boston, Mass.
Jas. Rees, Pittsburgh, Pa.
Jos. F. Wangler, St. Louis, Mo.
John M. Wilson, Wilson & Drake, Omaha, Neb.
Wm. Wickes, Wickes & Bro., E. Saginaw, Mich.
John C. Porter, Jr., Porter Boiler Company, Allegheny, Pa.
Mr. Warren, Buffalo, N. Y.
George W. Riley, National Tube Works, Pittsburgh, Pa.
Richard Hammond, Buffalo, N. Y.
George Mason and Albert Mason, Excelsior Iron Works, Chicago.
Jas. Leonard, Chicago.
G. L. McGregor, Chicago.
P. Hamler, J. Hamler and Henry Pratt, Tobin & Hamler Mfg. Company, Chicago.
U. S. Supervising Inspector-Gen. Dumont, Washington, D. C.
U. S. Supervising Inspector John Fehrnbatch, Cincinnati, O.
U. S. Supervising Inspector John D. Sloan, St. Paul, Minn.
J. McFarland, J. McFarland & Co., Chicago.
Wm. Hammond, Warren, Pa.
H. J. Hartley, I. P. Morris Company, Philadelphia.
Henry Barth, Charlevoix, Mich.
G. H. Musgrave, Boston.
Jas. F. Burke, Pittsburgh.
John D. Murphy, Chicago.
C. H. Westcott, Detroit, Mich.
J. P. Dugger, Kewanee Boiler Company, Chicago.
John T. Cullen, Clinton, Iowa.
T. R. McDonald and John T. Caulfield, Richmond, Ind.
John P. DeHaven, Conshohocken, Pa.
F. E. Leonard, London, Canada.
John, William, Albert, Joseph, Louis and Edward Mohr, of John Mohr & Sons, Chicago.
Charles, Albert, Otto and Herman Kroeschell of Kroeschell Bros., Chicago.
James Johnston, Chicago.
Peter Terwileger, Chicago.
L. Wright, Chicago.
Wm. Ball, Chicago.
Andrew Haley, St. Louis.
Among those who were present representing supply houses or manufacturing agencies were the following:
Edward L. Ryerson, Herman B. Butler, Christopher Murphy, L. M. Henoch, C. M. Carr and W. A. Roome of Joseph T. Ryerson & Son, Chicago.
W. H. Ward, Media, Pa.
A. M. Castle, Chicago; Alex. Scully, Scully Steel & Iron Company, Chicago.
Harry N. Hull, Tyler Tube & Pipe Company, Washington, Pa.

The badge worn by the members of the convention was the United States flag with "A. B. M. A., 1893, Chicago," printed on it in gilt letters. The Chicago members wore their badges draped in mourning in memory of the late Joseph Bee, one of their most esteemed associates.

Bids will be asked for a water supply for the city of Sacramento, Cal., amounting to 900,000,000 gallons annually. A 20 years' franchise will be granted to a company.

The Philadelphia Corliss Blowing Engine.

Pig iron has been manufactured for many years on the banks of the Hudson River, and it was, at one time, thought to be the most eligible situation in the United States. In the course of time, however, other localities have risen to be the favored, accompanied with occasional booms. During all of this time, however, furnaces have been quietly and without ostentation, and usually with profit, operated upon the Hudson River, and so satisfactory has been their operations that they have maintained a constant output without the more recent improvements introduced in the West and South. It is, however, impossible for them now to compete without employing some acknowledged improvements such as fire-brick stoves and more powerful blast and higher furnaces. About two years since these improvements were introduced at the Burden Iron Works and with marked success. Their product was practically doubled and their fuel consumption reduced in the neighborhood of 30 per cent. More recently the Poughkeepsie Iron Company remodeled one of their two furnaces and introduced two of the Gordon-Cowper-Whitwell stoves, each 17 x 60 feet. The product has gone up from about 50 to 100 tons, and the fuel consumption has been reduced in about the same proportion as was that of the Burden Iron Works. Due to this success this company have decided to improve their plant by building a new furnace at their site.

This furnace is to be 16 feet diameter of bosh and 70 feet high, the hearth being 10 feet in diameter. It is to be blown by six 6-inch tuyeres, the blast to be heated by three 19 x 60 foot Gordon-Whitwell-Cowper stoves, and the blast to be blown by two horizontal engines, 50-inch steam cylinder, 84-inch blowing cylinder and 6-foot stroke, while the steam is raised by 1200 horse-power of the Stirling water-tube boilers.

An illustration of the blowing engine is given. These engines are of the condensing Corliss type, the condensers being of the Bulkley form. The engine cylinder is 50 inches in diameter, the valve gear being operated by two independent eccentrics, to permit of a very long follow when the pressure becomes excessive and the steam simultaneously low, which is sometimes the case when the furnace gets into difficulties. The steam follow, and thereby the number of revolutions, is, as usual in Corliss engines, regulated by the governor, and the speed of the engine is varied by altering the relative speed of the governor and the engine by a friction plate and leather bush wheel, shown in the engraving. By moving the bush wheel toward the center of the friction plate the engine will run slower, while on moving it out the engine will run more rapidly, the variations in speed amounting to about 60 per cent.

A third eccentric is employed to operate the inlet valves of the blowing cylinder. These valves are 15 inches in diameter, and are as wide as the cylinder itself. The ordinary wrist plate of the Corliss gear is employed, that is, "the lazy action," whereby the valve opens and closes very rapidly, and remains almost motionless when closed.

The outlet valves, Fig. 4, are made of phosphor bronze, and have flat seats. In closing the valve seats against an air cushion formed within itself by a piston upon the stem, and in opening it

cushions upon leather rings upon a large bumper. The spring shown is merely sufficient to slide the vale close to its seat and offers but little resistance to the free opening of the valve. Thus the air enters the cylinder through mechanically moved passages with perfect freedom, and its outlet from the cylinder is through valve openings without ribs or angles and past a valve that moves away from its seat with a very moderate resistance. Three of these engines are being introduced by the

The fly-wheel is 24 feet in diameter, built in ten segments, upon a hollow center. It weighs with the center 50 tons, shipping weight. The shaft is steel, 18 inches in diameter. The bearings are 30 inches long. The engine is designed to blow the furnace up to 20 pounds pressure per square inch.

Mention may be made in this connection that the Philadelphia Engineering Works have recently introduced facilities provided by the Niles Tool Works Company of Hamilton, Ohio, for mill-

thracite, at the same time, and a blast introduced to make commensurate product with the advancement of the art, the resistance to the blast becomes far in excess of the capabilities of the old-fashioned blowing engines, and new machinery of the best design must be employed.

It is expected that the new Poughkeepsie furnace will be blown at about 15 pounds pressure per square inch as a regular thing, and occasionally 20 pounds pressure will be used and perhaps a

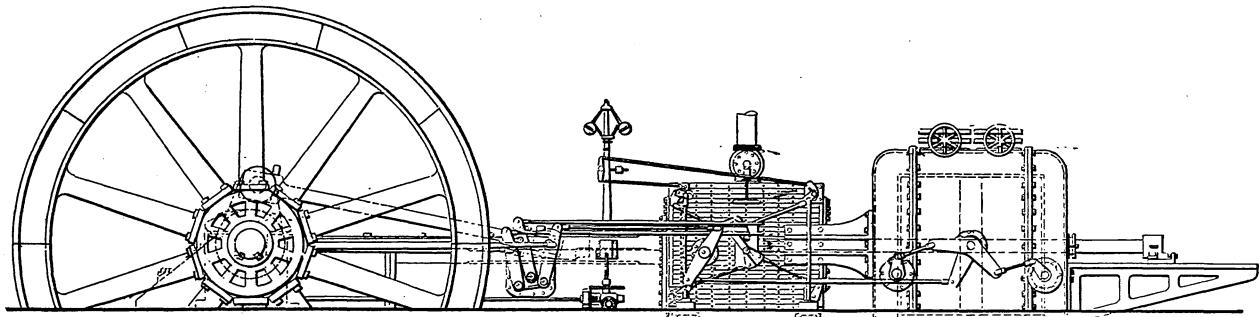


Fig. 1.—Side Elevation.

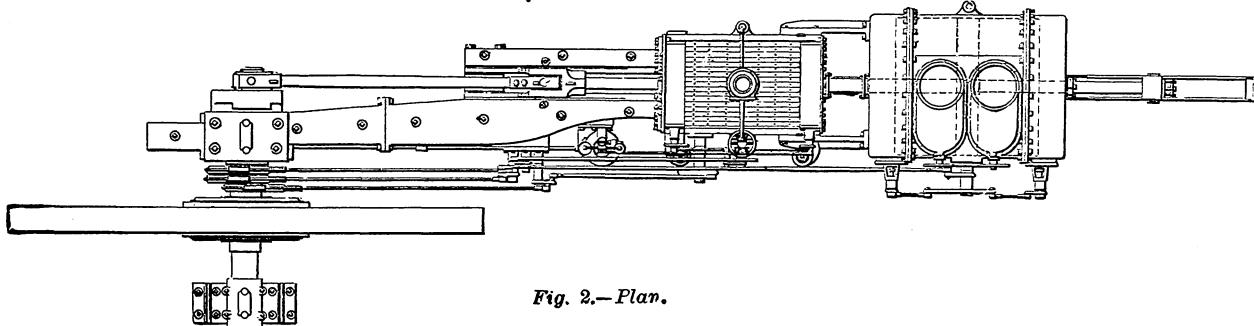


Fig. 2.—Plan.

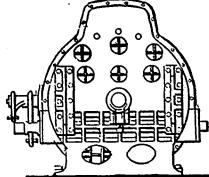


Fig. 3.—End Elevation.

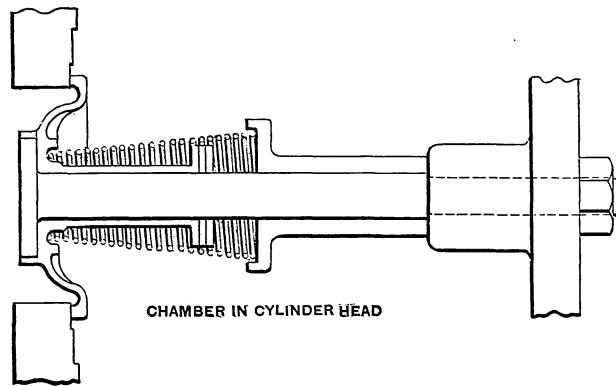


Fig. 4.—Air Outlet Valve.

THE PHILADELPHIA CORLISS HORIZONTAL BLOWING ENGINE.

Philadelphia Engineering Works, Limited, of Philadelphia; two to blow the new furnace and one to blow the old, though each of the engines are connected directly with the cold main of both furnaces, thereby permitting any one engine or any combination of engines upon either furnace.

The frame is 43 inches high and $1\frac{1}{4}$ inches thick in the front and $1\frac{1}{2}$ inches at the back, besides being ribbed across at every point where a foundation bolt is shown, and these foundation bolts pass directly through the top of the bed plate down to the bottom of the foundation. There are in all 22 2-inch foundation bolts employed with an average length of about 14 feet.

ing all of this machinery. In a late description of the steamship "Camarpania," it is stated that the Fairfield Company were employing milling instead of planing. The fly wheels of the engine shown were milled in sections and went together without a file. The frames are milled on the sides and ends, and drilled and tapped, and are completely finished before leaving the machines. The necessity for the heavy pressure of blast has been demonstrated by the recent experience at Troy and at Poughkeepsie. A moderate pressure of 8 pounds will blow an anthracite furnace with the old fashioned burden, but where the burden has been increased to about 2 pounds of ore to 1 pound of an-

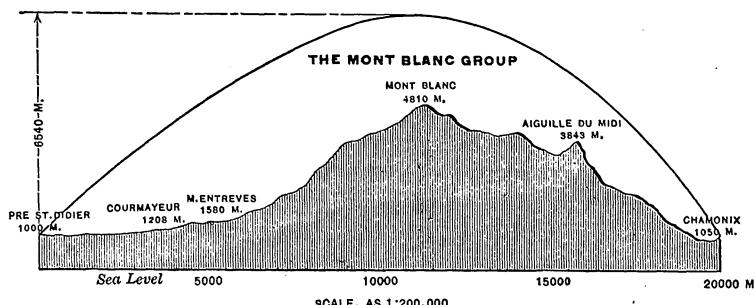
little more. Everything is made substantial and strong to meet this high pressure in blast furnace practice—a pressure until now unheard of. It would seem from recent experiments that there is a possibility of coke being discarded entirely and that with anthracite alone it will be possible to make product with the fine magnetic ores of the East that will rival anything that has been done in the West. Recent experience indicates that, contrary to the heretofore prevalent opinion, magnetic ores are as readily and as economically reduced in point of fuel consumption as any of the hematites. Chemically they should be more economically treated, as there is less oxygen

to remove; but with the practice hitherto prevailing they have been rather difficult to smelt. This led up to the belief that they were refractory, and that they would not of themselves make a good foundry iron. All of these old notions are being removed, and Fred Gordon of the Philadelphia Engineering Works looks forward to a marked revival in the iron making of the East and to the stop page of the transportation of Western irons across the Allegheny Mountains, although anthracite irons go West again. In view of the experience referred to and owing to the use of large percentages of concentrates, which experience indicates

The Trajectory of a Modern Gun.

An excellent illustration of the power of modern ordnance is given in the catalogue which the Krupps of Essen have issued concerning their exhibit at the World's Columbian Exposition. The 9.45 inch coast gun, which is 40 calibers long and weighs 31 metric tons, is so mounted that it can be fired at an elevation of 44°. With a projectile weighing 474 pounds and a powder charge of 253 pounds, an initial velocity of 2099 feet was obtained, and with the maximum elevation of 44° the projectile was hurled a distance of 65,616

punched. The plate, No. 4, was $\frac{1}{8}$ inch thick, while No. 11 was $\frac{1}{4}$ inch thick, and No. 14 $\frac{1}{2}$ inch thick. Nos. 7, 9, 10 and 12 were punchings from these cast-iron plates, 3 inches in diameter. Some of these punchings were $\frac{1}{4}$ inch from the edges of the plates, and since then other plates have been punched as close as $\frac{1}{8}$ and $\frac{1}{4}$ inch from the edge without a crack or break. Nos. 3 and 8 were full-length cuts 2 inches wide and 16 inches long from the hub of a pulley without a break. Nos. 5 and 6 are test bars broken on a Riehle testing machine, showing 30,000 pounds per square inch tensile strength.



Distance, 65,616 Feet.—Elevation, 21,456 Feet.—Height of Mont Blanc, 15,781 Feet.

THE TRAJECTORY OF A MODERN GUN.

as quite practical, the home market will be supplied not only with foundry irons, but with steel.

Each stove is 19 feet in diameter and 60 feet high. It is constructed so as to successively resist a pressure of 30 pounds per square inch. The stoves are of the usual Gordon-Whitwell-Cowper type, and designed to heat 18,000 cubic feet of blast per minute. Since their introduction in 1885, when it was looked upon as exceedingly amusing to talk of building a fire-brick stove without an immensely high chimney, 143 have been placed. The largest customers are the Tennessee Coal, Iron & Railroad Company, for whom a contract has just been completed for remodeling three of their modern Whitwell stoves into Gordon top chimney stoves. They have found that the draft through these little chimneys is 25 per cent. in excess of the highest separate chimney stove of either the Cowper or Whitwell type; in other words, that stoves of the same external dimensions will burn 25 per cent. more gas, and in doing so will receive heat in that excess.

The furnace bell is operated by a steam cylinder with adjustable steam cushion top and bottom. The boshes are protected by four of the Scott bronze bosh plates manufactured by Best, Fox & Co., who are also making the tuyeres and tuyere arches, cinder arches and notches. The boshes are maintained by a series of wrought iron bands, 8 inches by 1 inch, fastened together at the ends by eight $1\frac{1}{4}$ inch bolts, passing through slot holes. These bolts are furnished with a fine thread, and when heaved home to the full tensile power of the bolt within the elastic limit the slipping of these joints due to the expansion of the brick work will not take place until a strain of about 7000 pounds per square inch is brought upon the cross section of the band. The purpose is to keep the joints of the brick work tightly together, while if the strain exceeds the strength of the band the joint will yield, rather than the band burst.

feet at the Meppen proving grounds. In its flight the projectile reached an altitude of 21,456 feet, its flight occupying 70.2 seconds. This is reported to have been the greatest distance fired thus far by any gun with an equal weight of projectile. As the accompanying illustration shows, the projectile would clear Mont Blanc, and that it would be possible to fire over that mountain from Pré-St.-Didier.

Punched Castings.

The publication of a series of punched cast-iron plates from iron made by the Thomas Iron Company of Hokendauqua has brought out a similar piece of work, for which we are indebted to Edwin C. Will, foundry foreman of

The Tin Plate Report.

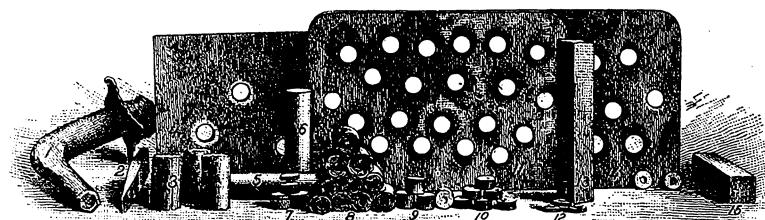
Our Washington correspondent sends us the following letter under date of June 13:

Ira Ayer, special agent of the Treasury Department relative to the production of tin and terne plates in the United States, was at the department to-day looking after the final touches to his special report on that subject. The report has been referred to Assistant Secretary Hamlin for analysis and examination, which process hitherto has been a sort of perfunctory affair at the hands of Assistant Secretary Spaulding.

This sudden change of tactics naturally creates considerable comment and speculation and diverse conclusions and has also led to the allegation that Col. Ayer's report is to be suppressed by the departmental free traders who have gotten into place under the wing of the new régime.

Secretary Carlisle said to your correspondent to-day: "The charge has been brought to my attention that we are purposely delaying, and, in fact, suppressing the report on the production of tin plate in the United States made in pursuance of provisions of the act of 1890. The statement, which has also been given currency in certain newspapers, is not true. The report has been referred, and when Assistant Secretary Hamlin shall have had time to give it a careful examination it will be made public."

An inquiry in another quarter elicited the significant and important fact that it might be some weeks before the report could be examined, in other



PUNCHED CAST-IRON PLATES.

Russell & Co., Massillon, Ohio. The castings were made from coke iron melted with coke and cast in green-sand molds in a horizontal position, the iron being the same grade used always by the firm in question in making their engines, harvesting machinery and saw mills. No alloys of any kind were used, nor were the castings annealed in any way. The punching was done on the regular machine without a crack or break. The plates had no supports about the edges and have not been altered or changed since they were

words, visible to the naked eye of the public. The parties who are interested in the data contained in this report are now surmising everything and are interrogating themselves and each other inwardly and outwardly as to whether there is to be any doctoring of the report or the application of other occult arts of departmental or official methods or political mathematics. At any rate, the suspicions which have been aroused are sufficient to keep the eye of scrutiny riveted upon Assistant Hamlin and the output of his sifting of Special Agent

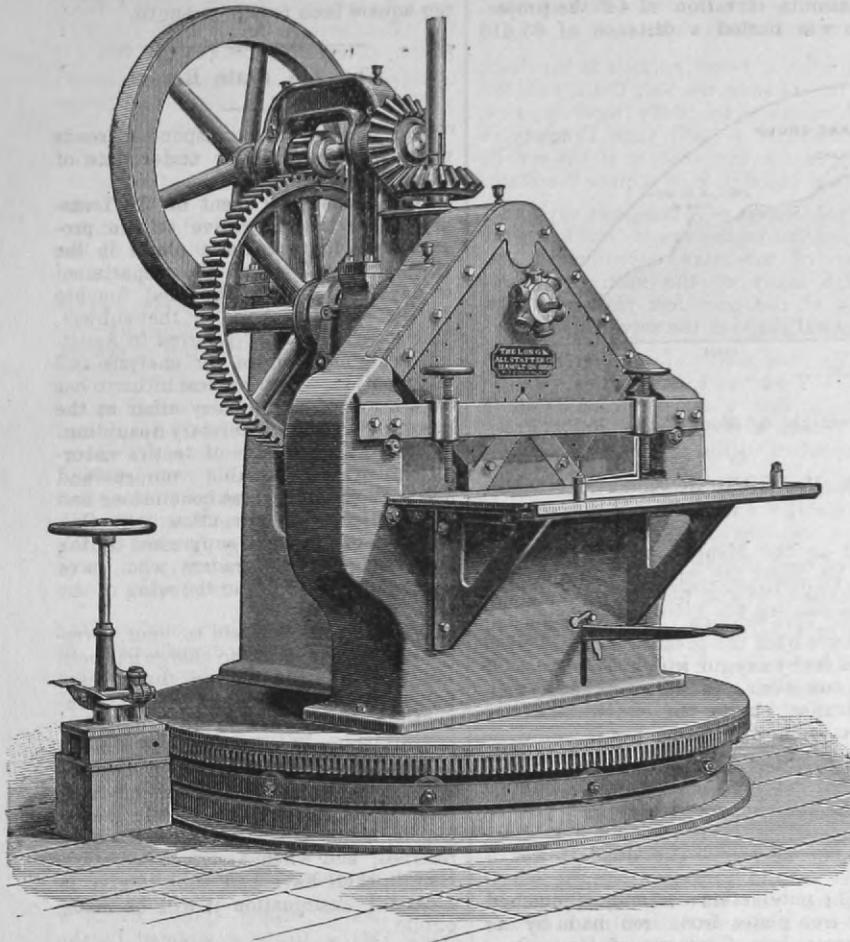
Ayer's statistics. Every one who is booked on schedule C knows that the existing duty of 2½ cents a pound on tin or terne plates, to take effect July 1, 1891, as prescribed in the act of 1890, is subject to certain limitations, to the effect that on and after October 1, 1897, tin plates and terne plates lighter in weight than 63 pounds per 100 square feet should be admitted free of duty, unless it should be made to appear to the satisfaction of the President (who should thereupon by proclamation make known the fact) that the ag-

barked in these enterprises. Any attempt of the Congressional and executive free trade tariff reformers to break the faith of the Government embodied in this solemn and binding enactment would be an outrage upon every sense of public honor.

On the first day of the coming October four years will remain of this period of limitation as to duty, and when it will be determined whether tin plates shall pay duty or go on the free list.

The report of Colonel Ayer for the six months ended December 31, 1892,

N. Y., pending before the United States Circuit Court of Appeals, at Detroit, Mich., was dismissed on the 15th inst. on motion of the appellants for the Cowles Company, at their cost. The patent at issue was the Hall patent, which is said to cover the only commercial method at present in use for the manufacture of aluminum. The patent had been adjudicated and entertained by the United States Circuit Court for the Northern District of Ohio, and the result of this decision leaves the Pittsburgh Reduction Company the only manufacturers of pure aluminum in the United States.



ANGLE IRON SHEAR MOUNTED ON TURN TABLE.

gregate quantity of such plates lighter than 63 pounds per 100 square feet produced in the United States during either of the six years next preceding June 30, 1897, had equaled one-third the amount of such plates imported and entered for consumption during any fiscal year after the passage of the act and prior to October 1, 1897. The law provides that the amount of such plates manufactured into articles exported and upon which a drawback shall be paid shall not be included in ascertaining the amount of such importations, and also provides that the amount or weight of sheet iron or sheet steel manufactured in the United States and applied or wrought in the manufacture of articles or wares of tinned or terne plates in the United States, with weight allowance as sold to manufacturers, or others, shall be considered as tin and terne plates produced in the United States within the meaning of the act.

These are the obligations of Congressional legislation to the manufacturers of tinned and terne plates in the United States, and under which capital em-

showed a total of production in the United States:

	Pounds.
Tin plates.....	9,750,106
Terne plates.....	20,959,110
Total.....	30,709,216

Of that amount 13,963,531 pounds being made from American and 16,745,685 pounds from foreign black plates. It is learned that the ratio of increase of production for the six months which will end on June 30 will be much larger. The aggregate importations of tin and terne plates and taggers' tin for ten months ending April 30, 1893, is given at 486,777,931 pounds, as against 315,102,936 for the same period in 1892. There was a decrease, however, in the April, 1893, importations as compared with April, 1892, the latter showing 70,489,102 pounds and the former 66,498,618.

The appeal in the case of the Pittsburgh Reduction Company of Pittsburgh, manufacturers of pure aluminum, against the Cowles Electric Smelting & Aluminum Company of Lockport,

Angle Iron Shear Mounted on Turn Table.

The machine illustrated herewith is designed for shearing bars of angle iron or steel, either square, at right or left hand angles without swinging the bars or turning them end for end, thus permitting long work to be done in narrow shops. The machine has capacity to cut angles 6 x 6 inches by $\frac{1}{4}$ inch thick or less, and is provided with a double set of shearing blades. It is operated by a heavy steel cam shaft, so arranged that it can be turned by hand from the front, for adjusting the shear blades. An iron table is provided, having gauges and clamps for holding the bar while being sheared. The machine is mounted on a turn table and driven through a vertical shaft, so that it can be swiveled entirely around and faced in any direction, permitting shearing to be done at any angle without moving the bar. The illustration shows the machine belt driven, but a steam engine is attached where it is desired. The machine is made by the Long & Allstatter Company, Hamilton, Ohio.

THE WEEK.

Plans have been drawn up by English engineers for a high-level bridge over the Mersey at Liverpool, the total estimated cost of the structure being \$9,000,000. The scheme provides for three spans, each having a clear water way of 1100 feet, the center span to have a clear headway of 150 feet above high water. There will be a clear roadway 40 feet wide, two outer footways 7 feet 6 inches wide and an overhead electric railway.

A recent opinion handed down by Judge Butler of the United States Circuit Court of Appeals confirms the opinion of the lower court that manufacturers cannot be held responsible for failure to fill a contract when it is impossible to secure cars from a railroad company. The opinion is regarded as being of considerable importance to large shippers.

More than 8000 coal and iron miners have now quit work near Kladno, Bohemia, and several encounters have taken place between them and the police.

The total acreage planted with rice in the United States this year is 261,000, while the estimated yield is 10,500,000 bushels. Trade statistics of the crop show that it is not up to the average of former years.

The earnings of about 100 of the principal railroads of the United States in May were nearly 10 per cent. greater than the income of the same representative group of roads in the corresponding period of 1892. Railroad officials

believe that 1893 is destined to rank high among the best years the American railroads have ever known.

The sentences hanging over the Panama Canal defendants have been quashed by the Court of Cassation, on the ground that the statute of limitations covered the offenses charged.

The latest reports of the cereal crop prospects in Great Britain are not encouraging to those who are mainly dependent upon them.

It is said now that the Nicaragua Canal is likely to be a success European governments are anxious to have a voice in its control.

Experiments have been made with electric lamps to determine their value in lighting up the bottom of the sea. The results indicate that they will prove of the greatest value for surveying wrecks or reconnoitering for concealed torpedoes.

The New York *Herald* estimates the shrinkage in the market value of stocks and bonds listed at the New York Stock Exchange during the last year at \$700,000,000, or nearly 10 per cent. of their nominal face value.

The practical value of carrier pigeons as messengers from vessels at sea has been demonstrated in several instances recently, and it is predicted by naval officers that they would become important factors in time of war.

It is proposed to build a large dam at Lake Albert Nyanza for the purpose of giving Egypt a plentiful supply of water during the low Nile. The scheme has been pronounced feasible by engineers.

The net earnings of the Western Union Telegraph Company for the fiscal year will be about \$7,568,000, out of which comes \$983,381 interest and sinking funds, and four quarterly dividends at the rate of 5 per cent., making \$6,684,798.

The project of constructing a railroad from Winnipeg to Hudson Bay stands some chance of being carried through since European capital has been interested. The scheme is an old one, but has never matured on account of lack of funds.

The Union of the German Iron and Steel Manufacturers has 314 members, who control a capital of about 1,500,000,000 marks and who employ 241,000 men.

It is stated that 25,000,000 acres have been made fruitful in India alone by irrigation.

The torpedo boat "Ericsson," now building at Dubuque, Iowa, will be launched next month.

The report of the Bureau of Statistics shows that for a period of 20 months under reciprocity, compared with 20 months before reciprocity, there was an increase in our domestic exports to Cuba of \$16,217,552, and an increase of our imports from Cuba of \$17,557,470.

A British foreign office report on labor in Germany states that working hours in Berlin are from 12 to 17 a day. In many districts in the Fatherland adults are said to earn no more than 25 cents a day; and 60 cents is a high wage, even in Berlin. The average income of all skilled trades in Germany is less than \$150 a year.

The question of the disposal of garbage is becoming a serious one with the health authorities of Philadelphia.

Since the operations of the United States Mint commenced in 1792 there have been coined 419,294,835 silver dollars.

It is estimated that \$4,000,000 will be required to complete Philadelphia's new city hall, exclusive of the tower.

The Town Council of Bruges, in Belgium, has resolved to subsidize a company to the extent of \$400,000 for the construction of a ship canal to connect the city with the sea, the object being to restore Bruges to her old time commercial importance and make her a rival to Antwerp, Ghent and other cities in the low countries having similar artificial waterways.

A reign of terror prevails in the State of Rio Grande do Sul, Chili, and the revolutionists are daily receiving new recruits. It is said that Uruguay is anxious for the success of the revolt, hoping through it to acquire the State.

Prof. Sylvanus Thompson says that we are just on the eve of another great wave of inventive development, in which many of the abstract discoveries of the past few years will take practical shape in the service of man.

The designers of the steamships "New York" and "Paris" express the opinion that a sea speed of 30 knots in Transatlantic voyages will be accomplished within the next ten years.

The agitation in New England for the nine-hour working day is extending to all branches of industry.

The corn crop in this country promises to be larger than last year, partly because corn was planted on land where winter wheat had failed.

Wheat was sold in the Chicago market last week for 63 cents a bushel. This is said to be the lowest price for 30 years.

It is stated that the shortage in ten States that yielded at least 250,000,000 bushels of winter wheat last year is estimated at from 75,000,000 to 100,000,000 bushels. The greatest loss is to be seen in Kansas, where the wheat crop last year was 74,000,000 bushels, but where this year it will be necessary to import wheat into that State for seed and bread. The visible supply of wheat, however, is greater by about 40,000,000 bushels than it was a year ago.

The elaborate schedules prepared by some of the trunk lines entering Chicago have had to be abandoned owing to the lack of travel which it was anticipated would begin with the opening of the fair.

An international fire congress is now being held in London, delegates from all countries of the world being in attendance. It is expected that the exhibition of apparatus and exchange of ideas will result in much good to the countries participating. In this connection it may be interesting to note that despite our finely equipped fire departments—the best in the world—statistics show that the loss from fire in the United States and Canada last year aggregated \$132,000,000.

The Legislature of New York has appropriated \$10,000 for the purpose of conducting experiments on the Erie Canal to determine the feasibility of the application of the trolley system to canal transportation.

The sugar planters of Louisiana have organized and will present statistics to Congress in support of a bounty.

The loss by the great fire at Fargo, N. D., by which the principal business portion of the city was destroyed, is now placed at \$8,500,000, while the insurance will not amount to one-quarter that amount.

The Vienna correspondent of the *London Times* confirms previous unofficial reports that Russian crop prospects are exceedingly bad.

The Corinth Canal, in Greece, the work of digging which is said to have been begun by the Emperor Nero, has been completed. It connects the Gulf of Corinth and the Saronic Gulf, and the time saved by vessels coming from the Adriatic to Athens will be about 17 hours. The canal cost \$14,000,000.

Sixty-nine thousand emigrants arrived at New York in May and a still larger number are expected in June.

There is some possibility that the Philadelphia mint, instead of being rebuilt, will be transferred to Washington, where it would be under the immediate supervision of the Director of the Mint.

Brooklyn (N. Y.) property owners have taken a decided stand against the further extension of the trolley system in that city.

An agreement has been signed by the Pacific Mail Steamship Company and the Panama Railroad Company whereby the former charter to the railroad company their three ships running between New York and Cuba. By this arrangement the costly friction which has existed between the two companies for some time will be terminated.

A novel use has been made of the telephone by the police authorities of Newcastle, England. Each constable carries about with him a telephone that consists of a combined receiver and transmitter. In the case of his requiring to communicate with headquarters he attaches the telephone to the alarms that are set up every here and there, and immediately he is in touch with the officer in charge. The system is of special advantage in cases of fire.

The water supply system of New York City is to be completed by the construction of a vast storage reservoir north of the Harlem River at a cost, including the price of the site, of from \$2,000,000 to \$2,500,000. The work is to be commenced forthwith. Jerome Park is said to be the site chosen by the aqueduct commissioners for the location of the reservoir.

Cudahy, the Milwaukee packer, has removed his great establishment from that city to a new suburb called after his own name. An electric line is to be started between the city and Cudahy.

New Orleans papers say that farmers in the Mississippi Valley are raising more hogs this year than they have ever done before, finding them more remunerative than cotton.

Wheat in the West reached last week the lowest price on record since the war.

Considerable extensions in the railway system of Egypt have been decided upon. In Upper Egypt the line will be extended to Keneh, near Luscor. In Lower Egypt the inadequate shipping facilities for cotton having caused frequent congestion of the main line from Cairo to Alexandria, an alternative line is to be constructed to the latter port at a cost of \$5,000,000.

The Iron Age

New York, Thursday, June 22, 1893.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Money and Exchange.

The impairing of financial confidence which has resulted in an increased demand for the circulating medium throughout the country culminated on Thursday and Friday of last week in advancing the money rate on call loans to 25 per cent. There were no clearances on Saturday, consequently no loans were made. On Monday the rate advanced as high as 20 per cent. From the time of the panic up to last week money on call has been comparatively easy, showing that there was a plenty available on the best classes of securities. On the other hand, owing to the business disturbances, the difficulty in securing time accommodations has grown steadily more pronounced. Throughout this period it was apparent that time money would become still more difficult to obtain, and that this increased demand would advance the rates in the call loan market.

The heavy shipments of currency to the interior, from Eastern centers, forced the issue—the withdrawals for this purpose being about \$8,000,000 weekly. The effect of advancing the call rate to the abnormal figure noted brought about a corrective condition, viz., the lowering of sterling exchange. Money as low as 1½ per cent. in London, a decrease in the Bank of England's discount rate of 1½ per cent. to 2½ per cent. in two weeks, and 10 to 25 per cent. money in this country, caused bankers to draw on foreign credits. These bills, together with grain bills and the renewals of sterling loans, caused exchange to drop from \$4.88½ to \$4.88 in a little over a week.

The exchange market at the moment is unsettled. Should the money rate fall the direct effect in the absence of other conditions would be to advance exchange. On the other hand, should grain purchases continue, as now seems likely, the balance of trade would turn in favor of this country. The extremely low price of grain has attracted foreign buyers. Europe is in need of a heavy tonnage and shows a decided disposition to take advantage of the present figures. Returns have not yet formed any pronounced movement owing to the scarcity of bottoms. High rates have directed tonnage in this direction, and it is believed that in another week the vessel capacity will be able to supply the demands.

Another important factor bearing on exchange is the revival of interest on the part of foreign capitalists in American investments. The announcement

that an extra session of Congress will be held in September for a repeal of the Sherman Silver law, as well as the change in sentiment in the South and West, is having even a more potent effect in restoring confidence in London than in this country. There is a decided tendency on the part of foreigners to invest in our best stocks and bonds, and were it not for our business troubles and the consequent liquidation, which is now at its hight, and which must run its course, this buying movement would become more pronounced. Even now, each morning, London quotations come higher than the American close of the night before, while London buying orders are easily traced in this market. Another important factor will grow out of the restoration of this confidence. The June and July interest payments will amount to something over \$50,000,000, the accumulation of which has contributed to the stringency. A considerable portion of this is due to Europeans. The better feeling will find expression in a reinvestment here.

The question of gold imports is as yet too remote to receive serious consideration. The present rate of exchange—\$4.83—is below the gold importing point. However, the market is narrow and may be changed in either direction in a week by a turn in the balance of trade, or in the sentiment of European capitalists.

The action of the Clearing House in deciding to issue Clearing House certificates, while a confession of extreme weakness, is the best thing that could have happened to restore confidence and ease the contracted situation. Ninety per cent. of business is done on credit: 90 per cent. of credit is confidence. In its timely action the Clearing House has struck at the root of the trouble. The action came none too soon, as a most unusual and unhealthy condition of the banks is reflected in the last statement. Every credit item showed decreases as compared with previous weeks; this has been the case for three or four weeks. Last week the surplus reserve decreased \$5,644.100; deposits \$12,389,200, while the decrease in loans was only \$3,699,300. It is the comparative relation of loans to net deposits that indicates the weakest spot. But seldom in the history of the Clearing House have the loans exceeded deposits. Last week they were \$4,164.000 in excess. A year ago they were \$47,099,100 less.

Had the saving action of the Clearing House not been taken the banks would have been forced to call in a large number of these loans. An action of this kind at the present time would have caused a contraction almost beyond comprehension.

In the meantime the whole business community has suffered terribly. We feel convinced that there would be general amazement were it known what enormous quantities, in the aggregate, of bonds, stocks and other securities have been taken out of the safes of our merchants and manufac-

urers to help them tide over temporary financial difficulties. On the whole, the business community has shown wonderful strength, but the sacrifices made will probably make our business men less indifferent in the future to financial experimenting on the part of politicians in Washington. The time has come when the man of affairs and not the demagogue should be heard in the councils of the nation.

The Engineering Congress.

It is a fact that foreigners seem to take the "congress" which the management of the World's Columbian Exposition has arranged far more seriously than do the Americans. Every conceivable branch of pure and applied science and of economics has been blessed with such a "congress," concerning which, on the whole, little is heard when the supreme moment finally arrives. Engineers all over the world have been invited to discuss the problems which agitate the profession during the probably sultry days at the end of July. The different branches of engineering will hold their own separate sessions under the auspices of the great national societies. We imagine that they have undertaken the unwelcome task chiefly because they desired to save the country from the disgrace and ridicule which would have been the sure outcome of a miscellaneous gathering of cranks and charlatans. Fortunately there will be no opportunity for the "professor" from Dead Man's Gulch to air his convictions and theories concerning the invariable relation between increased depth and higher assays of silver ore. Nor will the assembled experts of the world be forced to listen to the man who removes phosphorus, sulphur and all the rest from a 10-ton charge of steel with a pinch of some mysterious reagent. There will be nothing from the eminent mechanical engineer who has got away with friction. And yet with all these assurances of safety, we doubt whether the different branches of the Engineering Congress will be conspicuous successes so far as attendance and active discussion and participation are concerned. The noble but small band of regulars will be there, while the rank and file will compromise with their conscience by making their appearance at the first formal gathering. Then each one will go his way in quest of his own work or pleasure. Against the counter attraction of multitudes of interesting exhibits, and of the delights of the Midway Plaisance, the allurements of professional sessions have no chance.

Although the officers of the different national societies fully realized the effect of the drawbacks due to much greater rival attractions, they have made the most elaborate preparations for the presentation of important papers. The American Society of Civil Engineers and the American Institute of Mining Engineers have an array of

professional memoirs from foreign and American members which eclipses in volume and in worth anything thus far offered, and will make the Chicago sessions memorable in their history, so far as their printed transactions go. In that respect, by which, after all, success must be ultimately gauged, the Engineering Congress will be highly creditable to American engineers.

Four Days Across the Atlantic.

The possibilities of acceleration in the speed of transatlantic steamships, always an interesting subject, is a problem which has acquired additional interest to Americans since recent legislation has made it possible for American owners to construct and maintain a fleet of ocean-going vessels, built in the United States, with American capital, with a reasonable prospect of yielding a fair profit on the money invested. Many and various considerations, commercial and scientific, enter into the question, and these have been dealt with theoretically by recent authorities, without, however, adding very materially to our stock of absolute knowledge on the subject. Perhaps the most practical article on the possibilities of speed yet published is one contained in the current number of the *North American Review*. The writer is Prof. J. H. Biles of Glasgow University, who, as the designer of the successful ocean greyhounds, "New York" and "Paris," is well qualified to present a sound opinion in the matter. At any rate, he does so in no uncertain manner as regards the mechanical difficulties which lie in the way of the attainment of greater speed; and his conclusions are well worth consideration. Looking back on the progress which has marked transatlantic navigation during the last decade we find that the best time of transit from New York to Liverpool has during that period been reduced from about eight days to a little over six days. The question naturally comes up, will this ratio of increase in speed be maintained in the next ten years; and, if so, by what means will its accomplishment be attained? Mr. Biles is broadly of the opinion that an equal advance in the speed of transatlantic vessels will surely be witnessed during the coming decade. That is, that the time of passage will by then be reduced to a little over four days, necessitating a speed of 30 knots an hour. And he shows in detail how the extra knots are to be obtained.

Briefly, his conclusions are as follows: To attain a maximum of speed, the cargo-carrying feature will have to be reduced, or eliminated, in the swift mail and passenger carriers, the space thus gained being devoted to additional motive power, and the cargo relegated to slower vessels. This, he calculates, would give an additional $1\frac{1}{2}$ to 2 knots an hour. The use of nickel steel in construction in place of ordinary steel is another feature which

will add a further knot an hour. Up to the present, considerations of expense have prevented the use of this material, which is from 40 to 50 per cent. stronger than the steel now used, but the cost of it will surely decrease as years go by in the same manner as did that of its predecessor, and the ocean racers of the future will be made of nickel steel. The adoption of lighter boilers, of locomotive or other type, and the use of oil or other light fuel in place of coal, with improved methods of combustion and of utilizing heat, will also be details of improvement which may be expected in the evolution of the next ten years. Increase in structural dimensions, too, will tend to the same end, length and draft of water being valuable additions which can be made with a view of increasing speed, it having been proved that by increasing the length of some forms of vessels more velocity may be got out of them with the same amount of motive power. In fine, our authority concludes that a vessel 1000 feet long, 100 feet wide, with a draft of water of 30 feet, with a structure built of stronger steel than that at present adopted, with lightened boilers, with oil or other light fuel, and with the steady general improvements in methods of construction and management of ships and machinery, will be capable of crossing the Atlantic at a speed of 30 knots an hour, thus accomplishing the passage in a little over four days. In the designing of such a vessel, although many problems of structural detail will be involved, there is no insuperable difficulty. In the commercial aspect of such a departure it will, however, be more or less of an experiment at first. But the risk might be minimized by government subsidies to vessels of this class, carrying the mails, such as would secure the owners against loss. A system of subsidies based on speed results might be the most effective method of hastening the progress in this line, which, according to the best authorities, is bound to develop either from the Old World or the New within the coming decade.

A process of enameling sheet-metal work has been patented by Victor Dubois and William C. Stewart of Harvey, Ill. The special feature of the process relates to the means of producing a mottled effect. The first coating of enamel is applied in the ordinary way, and to the porous unglazed enamel coating a suitable volatile liquid is applied in spots or mottles, after which the article is placed in an oven and dried, so that the volatile liquid will be evaporated. When this has been done and the article placed in the furnace the spots or mottles are developed, producing the desired variegated appearance.

It is reported that a consolidation has been effected between the Sharon Steel Casting Company of Sharon, Pa., the Pittsburgh Steel Casting Company of Pittsburgh, the Standard Steel Casting Company of Thurlow and the Lancaster Steel Casting Company of Lancaster,

Pa., whereby these four concerns have been merged into one corporation, to be known as the Union Steel Casting Company. The capital stock is \$1,000,000.

Southern Pig-Iron Freights.

The Louisville & Nashville Railroad Company have issued new rates of freight on pig iron from Southern furnaces to points in the Middle and New England States. The new rates take effect June 22, and are for carload lots of $17\frac{1}{2}$ tons of 2268 pounds. The rates from the Birmingham, Sheffield and Chattanooga districts to some of the more important points are as follows:

To	From		
	Birmingham district	Chattanooga district	Sheffield district
Albany, N. Y.	\$5.30	\$4.80	\$1.05
Allentown, Pa.	5.09	4.59	4.84
Ansonia, Conn.	5.90	5.40	5.65
Baltimore, Md. (all rail)	4.26	4.86	
Bethlehem, Pa.	5.09	4.59	4.84
Birdsboro, Pa.	4.87	4.97	
Boston, Mass. (all rail)	5.90	5.40	5.65
Braddock, Pa.	4.40	3.90	4.15
Bridgeport, Conn.	5.90	5.40	5.65
Burlington, Va.	5.90	5.40	5.65
Cambridge, Mass.	5.90	5.40	5.65
Camden, N. J.	5.02	5.12	
Catasauqua, Pa.	5.09	4.59	4.84
Chester, Pa.	4.87	4.97	
Coatsville, Pa.	4.87	4.97	
Conshohocken, Pa.	4.87	4.97	
Dover, N. H.	5.90	5.40	5.65
Faston, Pa.	5.09	4.59	4.84
Elizabethport, N. J.	5.50	5.00	5.25
Elmira, N. Y.	4.90	4.40	4.65
Fitchburg, Mass.	5.90	5.40	5.65
Germantown, Pa.	4.87	4.97	
Ithaca, N. Y.	4.65	4.15	4.40
Jersey City, N. J. (all rail)	5.50	5.00	5.25
Lancaster, Pa.	4.88	4.76	
Lebanon, Pa.	4.47	4.57	
Lynchburg, Va.	3.36	3.46	
Newark, N. J.	5.50	5.00	5.25
New Haven, Conn.	5.90	5.40	5.65
Norristown, Pa.	4.87	4.97	
Norfolk, Conn.	5.90	5.40	5.65
Oswego, N. Y.	4.85	4.15	4.40
Paterson, N. J.	5.50	5.00	5.25
Philadelphia, Pa. (all rail)	4.87	4.97	
Pottstown, Pa.	4.87	4.97	
Reading, Pa.	4.87	4.97	
Roanoke, Va.	3.36	3.46	
Rochester, N. Y.	4.42	3.92	4.17
Seneca Falls, N. Y.	4.65	4.15	4.40
South Bethlehem, Pa.	5.09	4.59	4.84
Sparrow's Point, Md.	4.36	4.46	
Steelton, Pa.	4.41	4.51	
Troy, N. Y.	5.80	4.80	5.05
Waterbury, Conn.	5.90	5.40	5.65
York, Pa.	4.42	4.52	

Within the past three or four weeks a large number of Slavs and Hungarians have left the Connellsville region and returned to their homes. The falling off in the demand for coke, causing decreased operations of the ovens, is given as the reason for this large exodus of the foreigners. It is probable that many of them will return should the coke trade revive later in the year.

J. Stephen Jeans, late secretary of the British Iron and Steel Institute, is announced to read an important paper on "The World's Fair and its Lessons to Iron and Steel Manufacturers" at the conference of the iron and steel trades to be held in London on June 29.

Iron, which, as the successor of the old *Mechanic's Magazine*, started in 1823, can probably claim to be the oldest technical paper, has been amalgamated with *Industries*. The combined journal will be issued under the title of *Industries and Iron*, with new proprietorship, new editorship and new management.

Important Coke Decision.

As announced in our issue of last week, the United States Circuit Court of Appeals, sitting in Philadelphia, confirmed the opinion of Judge Buffington in the case of the Connellsburg Coke & Iron Company against McKeeffrey & Hofius, operating the Graffton furnaces at Graffton, Ohio. The opinion, written by Judge Butler, has been received and filed in the United States District Court at Pittsburgh. As will be remembered, the case involved the question as to whether shippers should be held responsible for failure to fill a contract when a car shortage has occurred.

The defendants in error brought two suits against McKeeffrey & Hofius to recover the price of coke delivered to the latter at different dates, in pursuance of a contract made in July, 1889. The amount claimed was over \$8000. The coke was to be delivered at the rate of 15 cars a day. The defendants claimed the coke was not delivered according to contract—that is, the number of cars per day pledged was not shipped. The plaintiffs, however, proved at the trial that during the season of 1888 they had a contract with the defendants similar to the one in suit; that during the car shortage of that year cars were distributed to defendants according to the same custom as was followed in 1889 and no objection was made by the defendants. Complaint was made by the defendants that they did not get all the cars they ordered; and it was claimed the plaintiffs were bound to use their individual cars to furnish them coke.

Judge Buffington found that the agreement entitled the defendants to 15 cars per day, and that the plaintiffs were not responsible for any shortage of cars and could not be held accountable because of the distribution they made, and that they were entitled to recover the money sued for. To these findings and rulings many exceptions were taken and as many as 21 errors were assigned. Judge Buffington, however, is sustained in every particular. Among other things Judge Butler says :

"The defendants say that as the plaintiffs had a sufficient number of cars to fill their order (if none had been applied to others) they should have had the 15 cars. But the common course of dealing in such cases, as the evidence shows, requires the manufacturer of coke to divide his supply ratably among all orders on hand when the shortage occurs; thus we are enabled to understand what is meant by the terms 'not to be held responsible in damages for the railroad company's failure to supply transportation,' which qualified the preceding obligation to furnish 15 cars per day. They plainly mean a failure to supply cars and other means of transportation equal to the demands of the trade.

"The contention that the plaintiffs should have supplied them with all the cars received from the railroad company up to the required number, and if not, that a distribution should have been made upon the basis of the orders on hand at the date of the contract, is not only against common usage, but is unreasonable. If sustained it would be destructive to the trade. To answer that parties can guard against the danger by contracting accordingly, and this contract is to be construed as construed for because the usage is not written into it does not help the defendants. No sensible man would so con-

tract as to destroy his business, and in contemplation of the law the usage is written into this contract.

"Finding no error in the several assignments the judgment is affirmed.

OBITUARY.

WALTER M'QUEEN.

Walter McQueen, one of the most prominent business men of Schenectady, N. Y., died at that place June 16. He had been in poor health for some time. In the year 1851 he acquired an interest in the Schenectady Locomotive Works, which he had retained since his retirement from active life. Mr. McQueen acted as vice-president of the locomotive works when the late Charles G. Ellis was the president. The deceased was well known all through the county as the inventor and builder of the McQueen locomotive. From 1852 to 1874 Mr. McQueen was superintendent of the locomotive works. In 1874 he was elected vice-president, which position he held up to the time of his death.

COL. JOSIAH ROBBINS.

Col. Josiah Robbins, one of the best known iron manufacturers of Western Pennsylvania and superintendent of the Claire Furnace Company, Limited, at Sharpsville, Pa., died at his home in that place last week after an illness of three weeks. He was a brother of A. M. Robbins of M. A. Hanna & Co., Cleveland, Ohio.

ROWLAND SEARS.

Rowland Sears died at his residence in Lockport, N. Y., June 16, after having been ill for some time. He was born in Scipio, N. Y., March 24, 1816, and went to Lockport in 1826. For many years he was prominent in business and was a member of the old hardware firm of Flagler, Sears & Pomroy. After the dissolution of that firm he engaged in the manufacture of cutlery with M. L. Borse, T. T. Flagler and Daniel Van Valkenburgh, all of whom are deceased excepting Mr. Flagler. In 1877 Mr. Sears retired.

PERSONAL.

J. S. Jeans, secretary of the British Iron Trade Association, has returned to Europe.

C. Bach, professor of mechanical engineering at the Polytechnic Institute at Stuttgart, Germany, has returned to Europe.

A. Priestman of the Priestman Engine Company of Philadelphia has returned from Europe, where he has been for the last three months on business connected with the Priestman engine.

The Chateaugay Iron Company of Plattsburgh, N. Y., will take the water jigs out of their concentrating mill at Lyon Mountain, N. Y., and put in Ball & Norton magnetic separators.

The new gunboat "Machias," in her recent speed trial, accomplished the unprecedented feat of beating her guaranteed speed by nearly 2½ knots, winning \$45,000 premium for her builders.

The first two cases to be considered by the new State Arbitration Board of Ohio have been received at Columbus from Belmont County. They involve the payment of wages to the employees of the Pittsburgh & Belmont Coal Company.

Mesaba Mines.

On a part of the Mesaba range that has not been touched upon in these descriptive articles—that is, in township 58, range 16, 12 miles to the east of the Mountain Iron and 6 miles east of the Adams, described last week—is the property of the McKinley Iron Company. Two mines have been shown here, one called the Upper McKinley, on sections 8, 58, 16; the other, the Lower McKinley, on 17 and 18, in the same township. Operations on both have been carried on for a little over a year, and on the upper mine an ore body has been shown 2500 feet in length, east and west, and some 700 feet wide. The body is of a depth of from 40 to 90 feet, or over, for which pits have been sunk to those depths. None of them in the above-defined area have reached the bottom of the deposit. On this property there are 20 pits 40 feet or more in ore, and many others of a less depth. There being an average surface of 35 feet covering the ore, it was decided to follow the underground method, and there are already some 600 lineal feet of drifts run, and considerable ore has been hoisted to stock pile from them. Two complete hoisting plants are now being installed at this property, each of which is calculated to hoist 2 tons of ore a minute. The mine is in condition to ship a very considerable quantity of ore this year if the market warrants, possibly 150,000 tons, but it will probably be put in the best of shape for next season, and comparatively little done in 1893 in the way of sending out ore.

On the Lower McKinley less work has been done, because the abundance of water demands large pumping capacity, and pumps have not yet been put in. Here the ore body has been followed for a distance of 1½ miles along the general trend of the range with an explored width of 600 feet, the probability being that it is wider. There is an average surface here of about 80 feet, largely gravel and clay, and the ore body has been tested only to an extreme depth of 40 feet, with no indications of bottom at that depth. In this ore body is a large deposit of high-grade manganese from 25 to 40 per cent. This manganese ore is a very handsome ore, indeed, as is much of the iron of these two mines. The McKinley ore seems to average between 62 and 68 per cent. metallic iron, about 0.030 phosphorus, and is quite high in silica. It is a crystallized soft blue ore. A number of average assays are as follows:

Iron.	Phos.	Silica.	Mang.
62.55	0.021	8.841	0.546
65.05	0.028	4.041	0.046
63.45	0.037	5.674	0.296
65.25	0.019	5.454	0.531
67.05	0.017		
63.75	0.025	4.44	0.17
60.95	0.022	8.53	2.15
61.25	0.021	9.46	0.532
63.10	0.031	4.72	0.269
64.90	0.018
67.10	0.018
65.60	0.035	2.33	...

Samples sent by this company to the Minnesota exhibit at the World's Fair analyzed as follows:

Iron.	Phos.	Silica.	Mang.	Water.
64.70	0.014	5.98	0.13	0.68
65.75	0.009	4.63	0.11	0.48

The McKinley Iron Company are capitalized at \$5,000,000 and hold most of the above lands in fee. They also own other large tracts. The chief owners are John and William McKinley of Duluth and James Charnley of Chicago. Reliable estimates made by conservative Cleveland ore men are to the effect that

the company have in sight at the lowest figure 12,000,000 tons of ore. The company have lately closed arrangements with New York capital for the development of the mine on a larger scale, and for the handling of their ore by the Duluth, Missabe & Northern road. Probably about 25,000 tons will be shipped this year.

The Biwabic Mine in 3, 58, 16, operated by the Biwabic Ore Company, shipped its first cargo of ore this week. The mine is a stripped property and about \$100,000 has been spent in stripping the surface. The ore was loaded direct from the stripped area with a steam shovel, and was dug up with as great ease as if it had been sand. This is said to be the first lot of iron ore ever taken from its original bed by steam shovel in the Lake Superior district, and as such is a good deal of an event. Some 500 tons were shipped. In the week, too, the Minnewas Mine in 16, 58, 17, owned by the Biwabic Company, an underground property, shipped its first ore to Cleveland, some 3000 tons. The Lowmore Mine, operated by G. A. St. Claire, late of Ishpeming, located in 3, 58, 18, also became a shipping mine, sending out 500 tons. Probably a dozen more properties will become shippers to greater or less extent in the next 60 days.

The Amalgamated Association.

The eighteenth annual session of the Amalgamated Association of Iron and Steel Workers, which convened in Pittsburgh Tuesday, June 6, has been concluded, an adjournment being had on Saturday afternoon, the 17th inst. After the formulating of the iron scale the balance of the time of the convention was taken up in discussing matters of interest to the organization, and also in the appointment of three committees to represent the workmen in conference with the manufacturers. As stated last week, one of these committees will take up the iron scale proper, another the scale of wages governing sheet mills, and the third the scale of wages for tin house labor. About the last action taken by the association was the election of officers, all of whom were re-elected with the exception of Edwin Keil, treasurer, who was succeeded by Roger Evans of Youngstown, Ohio. The officials of the Amalgamated Association now consist of the following: M. M. Garland, president; J. C. Kilgallon, secretary; Stephen Madden, assistant secretary; and Roger Evans, treasurer. Trustees were also elected, consisting of Chas. Kaufman of Wheeling, W. Va.; John Pierce of Pittsburgh, and George Cookson of Anderson, Ind. It was also decided to hold the nineteenth annual meeting of the association in Cleveland, Ohio, to convene in that city on May 22, 1894. On Saturday, the day of adjournment, President Garland sent a communication to John Jarrett, secretary of the Iron and Steel Sheet Manufacturers' Association, asking for a conference with the manufacturers, to which Mr. Jarrett replied by naming Monday, the 19th inst., at 10 a.m. Arrangements were also made by President Garland with James McCutcheon, chairman of the Iron Manufacturers' Conference Committee, by which it was arranged to hold a conference in the Ferguson Building, Pittsburgh, on Monday at 2 p.m.

In the courts at Pittsburgh last week arguments were heard in the case of L. B. Rider against S. Jarvis Adams. The

suit is to recover for the alleged infringement of a patent on an improved method of foundry molding.

The past week has been eventful for the number of failures which have taken place, and the iron trade has not escaped the financial cyclone which has swept the entire country. In the middle of last week the Baackes Wire Nail Company of Cleveland, suspended. On the 16th inst. judgments and executions aggregating \$350,000 were entered against the Duquesne Tube Works Company of Pittsburgh. It is supposed that the assets exceed the liabilities, and that the company will be able to pay all debts and continue business uninterruptedly. The company own a valuable plant, and have been in operation five years. Following this comes the report of the failure of the Oil Well Supply Company of Pittsburgh, who went into the hands of a receiver on the 19th. They state that their obligations were so pressing that to save a sacrifice of the assets by forced sales, the appointment of a receiver was decided upon. The entire assets are placed at \$2,500,000, and the indebtedness at \$1,100,000. The company expect to pay all their liabilities with interest and have large properties left. The company were incorporated on March 19, 1891, with a capital stock of \$1,500,000. They claim to own real estate valued at \$780,000, on which there is a mortgage of \$300,000, and stock and merchandise worth \$840,000. Under same date the Eaton, Cole & Burnham Company, manufacturers of brass goods at Waterbury, Conn., announce their inability to take care of maturing obligations. No statement of their finances has been made public, other than the promise to pay all indebtedness in full. The strained condition of the money market is given as the direct cause of all the three failures.

At a final meeting of the Rapid Transit Commission of New York a proposition was agreed upon, which, if accepted by the Manhattan Elevated Railway Company, will secure rapid transit to the city. By the terms of the agreement the company are given the franchises asked for at a gross rental of \$175,000 a year, or 5 per cent. on the net income of the company, provided the minimum of \$125,000 is accepted. The plan provides for a third track on the Sixth, Ninth and Third avenue lines for express trains, a further extension of the system into the annexed district and other smaller extensions downtown, which may be deemed necessary. While the plan outlined is not regarded as thoroughly solving the question of rapid transit in New York, the scheme is the outcome of over two years' deliberation on the part of the commission.

In a late report the British Consul at Batoum places the total output of Russian petroleum wells in that district for last year at 5,491,970 tons of crude oil, averaging a daily yield of 15,045 tons. On December 31,299 wells were producing, and the number is increasing. Petroleum to the value of \$14,254,416 was exported in 1892.

The Government of India has sanctioned the formation of an engineering school in Burmah for training native youths for subordinate grades in the Public Works Department.

MANUFACTURING.

Iron and Steel.

The Duquesne Tin Plate Works of Duquesne, Pa., have been granted a charter, with a capital stock of \$10,000. The directors are Chas. and Emmanuel Dreifus of the firm of Dreifus, Block & Co., dealers in scrap iron and steel, Lewis Block, Pittsburgh, and Jacob and Isaac Wildberg of Pittsburgh.

The New Kensington Mfg. Company, New Kensington, Pa., have been granted a charter of incorporation, with a capital of \$8000, for the manufacture and sale of enameled iron and steel, brass and tin goods.

The New Albany Rail Mill Company of New Albany, Ind., are dismantling their puddling, 10-inch and structural mills, and shipping them to Alexandria, Ind., where a new plant is now in course of erection. The sheet department continues in operation at New Albany, but it will close down in a few days, and will be removed to Alexandria. The equipment of the new plant at the latter-named place will consist of two 8-high sets of muck rolls, 16 double puddling furnaces, one 10-inch train, two 8-inch trains, and the old rail mill train, which will be used as a bar mill. The sheet-mill department will be equipped with three sheet trains.

The Shickle, Harrison & Howard Iron Company of St. Louis announce that they are turning out soft open-hearth basic-steel castings for mill gearings, machinery castings, locomotive and railroad castings, cable grip, &c.

Madison Furnace of Clare, Duduit & Co., at Rempel, Ohio, blew in on the 4th inst.

The Donahoo Steel & Smelting Company have been organized, and will build a steel plant, with a daily capacity of 100 tons, at Oakland, Cal. The Jones process will be employed, Mr. Jones being one of the incorporators. The capital stock is \$500,000.

The new plant which the Ironton Structural Steel Company are erecting at Duluth, Minn., is nearing completion, and will probably be ready for operation in July.

The Alabama Steel Works, at Fort Payne, Ala., are being put in shape to resume operations. A test was made of the machinery last week, and the furnaces are being gradually heated. It is stated that they will commence operations about the first of next week.

The Iron Gate Iron Company, at Iron Gate, Va., have leased the old Grace Furnace tract in Craig County, and will build a railroad three miles long to carry ore to their furnace, which will be put in operation as soon as the work is completed.

A serious explosion, badly damaging the South Pittsburgh, Tenn., furnace, occurred last week.

It is stated that the Birmingham Rolling Mills, at Birmingham, Ala., will close up their business affairs at that point on July 1, and remove their plant to Louisville or some other point in Kentucky.

It is stated on good authority that the Cherokee Iron Company of Cedartown, Ga., have sold their entire property and that the purchasers are making preparations to start up the furnace. The terms of the deal have not yet been given.

Work is progressing rapidly on the new furnace of the Roane Iron Company, at Rockwood, Tenn. The stoves are nearly finished and it is expected that the furnace will be ready for operation by January 1. As soon as the furnace is finished another one of 125 tons' capacity will be erected by its side.

The Appalachian Steel & Iron Company, operating the Polly Furnace at Big Stone Gap, Va., have been placed in the hands of receivers, E. J. Bird, Jr., president, and H. H. Bullitt being appointed. The receivers have already made arrangements to start up the furnace again and work will go on as usual.

The Pottsville Iron & Steel Company of Pottsville, Pa., are constructing a new hammer shop for the Baldwin Locomotive Works at Seventeenth and Hamilton streets, Philadelphia. The building will be about 50 x 200 feet, two stories, with iron roof. The construction is required to be unusually heavy in view of the fact that the trip hammers will be placed on the second floor.

The Morris-Bailey Mfg. Company, of Pittsburgh, Pa., have been granted a charter of incorporation, with a capital of \$100,000. The directors are W. J. Morris, Robt. Bailey, J. D. Hailman and J. K. McCance. This new concern will succeed to the business of Morris & Bailey, manufacturers of cold-rolled steel, whose works are located at Liberty avenue and Thirty-first street, Pittsburgh.

A report was current last week that the Brown-Bonnell Iron Company, Youngstown, Ohio, had discharged all their puddlers. We are advised that there is no truth whatever in the rumor.

The Brier Hill Iron & Coal Company, Youngstown, Ohio, have placed a contract with McClure, Amsler & Co., engineers and contractors, Pittsburgh, for the erection of a hot-blast stove of the Massick and Crooke's design to be erected at their Grace Furnace. The foundations are now being put in, and it is expected the stove will be connected not later than September 1 next. The size of the stove is 19 feet 6 inches by 70 feet.

Machinery.

The Howe Emery Wheel Company have the foundations laid for their new plant at North Tonawanda, N. Y.

Dow's foundry at Grand Forks, N. D., has been destroyed by fire, at a loss of \$10,000.

Application has been made for the appointment of a receiver for the Cline Engine Company of Plymouth, Ohio. The company were organized in 1892 for the purpose of manufacturing engines, the capital stock being \$15,000.

Three hundred machinists and other employees of the B. F. Sturtevant Company, Jamaica Plain, Mass., went on strike because the company refused to grant ten hours' pay for nine hours' work.

The receiver of the Sioux City Engine Works, Sioux City, Iowa, has filed his statement of the assets and liabilities of the company. The assets foot up \$270,000; while the liabilities aggregate \$211,232. The tools and fixed machinery are valued at \$61,731, the buildings at \$45,000, and the material on hand, not in process of construction, at \$29,345.

Schenectady, N. Y., is thinking of inviting the International Tool Company of Boonton, N. J., to locate there. The company are 12 years old and desire to increase their manufacturing capacity.

At the annual meeting of the stockholders of the J. B. Sheriff Mfg. Company, dealers in machinery at Pittsburgh, held there last week, W. J. Sheriff was elected president, Neville C. Davidson, secretary; Henry Trauter, treasurer, and John W. Gunning, superintendent. J. W. Gunning, N. C. Davidson and L. Bennett were elected directors.

At a meeting of the stockholders of the Westinghouse Air Brake Company, held in the Westinghouse Building, Pittsburgh, Pa., last week, the regular quarterly dividend of 5 per cent. was declared, and an extra dividend of 5 per cent., making in all 10 per cent., or a distribution to the stockholders of \$500,000.

The Robinson-Rea Mfg. Company of Pittsburgh, builders of rolling mill machinery, have under construction a large foundry 200 x 143 feet in size, which will take the place of the one destroyed by fire some months ago. The building will be equipped with machinery of the latest design.

At a special meeting of the stockholders of the Union Switch & Signal Company, held in Pittsburgh last week, the proposition to issue new bonds to the amount of \$300,000 for the purpose of reducing the existing mortgage bond indebtedness of the concern was adopted. At the same time the directors declared a dividend of 1½ per cent. upon the preferred stock.

As announced last week the Mitchell Mfg. Iron & Steel Company of Pittsburgh have been granted a charter, with a capital stock of \$1,000,000. The new concern propose to engage in the manufacture and sale of an automatic device for closing open switches. It is stated that a plant will not be erected for the present, but the article will be manufactured by some other concern.

Byram & Co. of Detroit, Mich., have just shipped the second Colliau cupola furnace to the Marietta Hollow Ware & Enameling Company of Marietta, Pa.; one to the Wilbraham-Baker Blower Company, Trenton Junction, N. J.; two for the Hydraulic Machine Works, Pittsburgh, Pa.; one for the

U. S. Navy Yard, Mare Island, Cal., and one for the Connersville Blower Company, Connersville, Ind.

E. R. Richards, the New York agent for J. A. Fay & Egan Company of Cincinnati, Ohio, has lately secured several large orders for complete outfits for new factories, notable among which is the one for J. Curley, carriage manufacturer, of Brooklyn, N. Y. The additions consist of band saws, circular saws, planers, shapers, boring machines, sand belts, rounding machines, emery wheel grinders, blowers, some special machines and several elevators, all of which are driven by electricity.

The South Milwaukee Malleable Iron Company have accepted plans for and will soon begin the erection of a substantial addition to their already large plant at South Milwaukee, Wis. The new space, which will be used for molding purposes, will stand 170 by 70 feet. This will necessitate a considerable addition to their force.

It is reported that George R. Lombard of Augusta is negotiating for Tynan's Machine Works, at Savannah, Ga. If Mr. Lombard makes the purchase he will add an iron foundry and make other improvements to cost \$100,000.

The Milwaukee Boiler Works, Milwaukee, Wis., are about to erect an immense plant on the main line of the C. & N. W. Railway near South Water street, the ground measuring nearly 400 feet square. They have a dockage of 300 feet, which will give them excellent shipping facilities by water, and the close proximity of the Northwestern furnishes all that could be desired by rail. They expect to occupy the new quarters during the coming winter.

Wm. Bayle & Sons of Milwaukee, Wis., suffered heavily in the late fire, and now have in process of erection an entirely new plant at the corner of Greenbush and Burnham streets. The foundry building will measure 300 x 120 feet; the molding, 130 x 75, two stories high, while three separate structures, each 40 x 60 feet, will be occupied by the blacksmith shop, engine and boiler room and offices, the latter two stories in height. The plant will be supplied with two traveling cranes of 20 and 30 tons capacity.

The J. H. & D. Lake Company, manufacturers of all kinds of friction-clutch pulleys, having outgrown their old quarters at Hornellsville, N. Y., have recently completed and removed to their foundry at Massillon, Ohio, where, with enlarged facilities, they are prepared to meet the growing demands of their business.

The Berlin Iron Bridge Company of East Berlin, Conn., are putting up a new foundry for the Watts-Campbell Company, at Newark, N. J.

W. C. Evans and B. J. Allen and associates have chartered the Meridian machine shops, at Meridian, Miss., with a maximum capital of \$100,000, to manufacture engines, presses, boilers, &c.

It is reported that the Westinghouse Electric & Mfg. Company of Pittsburgh secured orders during May for 70,000 new lights, besides getting a large amount of new street railway business. Under the old organization the largest single month's business ever transacted is said to have been 30,000 lights.

The Standard Scale & Supply Company, Limited, of Pittsburgh, have received a contract from the Ohio Steel Company of Youngstown, Ohio, for all the scales which will be used in the equipment of the new Bessemer plant now building by that concern.

The Wheeling Mold & Foundry Company of Wheeling, W. Va., have been granted a charter of incorporation with a minimum capital of \$6500, with the privilege of increasing to \$100,000. The new concern propose to engage in the manufacture of molds, castings, and structural work of various kinds. The officers are, L. V. Blue, president, and C. E. Blue, secretary.

It is reported that the Westinghouse Air Brake Company have purchased about 20 acres of land adjacent to their present works at Wilmerding, Pa.

Warren Webster & Co. of Philadelphia, manufacturers of the Webster vacuum feed water heater and purifier and Williams' vacuum system of steam heating, are erecting a three-story brick building 120 x 65 feet at Point and Elm streets, Camden, N. J. The building fronts on the Delaware River, and the site presents ample opportunities for railroad extension and shipping facilities. They will transfer their entire

plant to the new building as soon as completed and will supplement it with other machinery adapted to the requirements of their growing business. They expect to commence removal about the middle of July.

The D. E. Whiton Machine Company, New London, Conn., in addition to their regular line of gear cutting machines, lathe and drill chucks, have recently completed several extra heavy special valve chucks of peculiar design embodying a number of important improvements. Their business year, just closing, is reported as showing a considerable increase over last year.

Kennedy Valve Mfg. Company, 52 Cliff street, New York, are under contract with the Department of Public Works for the construction of four 48-inch gate valves to be used in connection with the new aqueduct. They weigh when finished 12 tons each. This company turned out a like number of these valves of the same dimensions last year for this department.

Miscellaneous.

The Greensburg Fuel Company, Greensburg, Pa., who recently made some experiments at that place in the manufacture of fuel gas by the Askin's process which were quite successful, have since built a plant which is about completed, and the concern expected to turn the gas into the lines on the 14th inst. We are advised that thus far everything has been very successful, and the concern expect to furnish gas at a very cheap cost, and at the same time compete with natural gas. The officials of the Greensburg Fuel Company are Thos. Donohue, president; Jos. R. Eisaman, treasurer, and J. M. West, secretary.

The Philadelphia Natural Gas Company of Pittsburgh have declared a regular quarterly dividend of 1½ per cent. Since this concern resumed dividends 15 months ago the rate has been 5 per cent. per annum, and the increase to 6 per cent. at this time reflects considerable credit on the able management and the excellent condition of the concern.

On account of the condition of business the Hunter Arms Company of Fulton, N. Y., have been obliged to reduce their number of skilled workmen by 35.

Within a short time ground will be broken at Niagara Falls, N. Y., for a large copper smelting works, to be built on the lands of the Niagara Power Company. It is the intention of the new concern to use electricity in the smelting process. The buildings will be completed in about three and a half months. Included in this plant will be a fine ore dock. It is expected that the number of employees will be large.

Work in the locomotive department of the West Milwaukee, Wis., car shops will be resumed on June 28, and it is thought that the car department will also start up early next month.

The Shultz Belting Company, St. Louis, Mo., report a heavy export demand for their belting. During the week they made several shipments to foreign ports, the majority of the belting being shipped to England. The local demand is heavy and shows a gratifying increase in comparison with the corresponding period of last year.

The Aluminum Brass & Bronze Company of Bridgeport, Conn., have closed their works on account of dull business. Operations will probably be resumed should an improvement in business take place.

The new plant of the big Gatling Ordnance Company, at Gatling, a new suburb of Buffalo, N. Y., was dedicated June 3. Dr. Gatling himself addressed 600 people, saying that the company would manufacture the largest and most serviceable guns in the world, cast in a single piece, to take the place of those now employed by the nations of the world; guns that would do five times the work at a third less cost. The Government had already appropriated \$6,000,000 for such guns, but it would require \$600,000,000 to pay for a complete equipment of them in this country alone. Dr. Gatling superintended the placing of the corner stone and dedicated the plant. Among those present was Col. Wood, the newly elected president of the Gatling Ordnance Company.

The works of the Standard Wheel Company, at Sandusky, Ohio, have closed down, owing, it is said, to lack of business.

The Manufacturers' Natural Gas Company of Pittsburgh have declared the regular monthly dividend of one-half of 1 per cent.

TRADE REPORT

Dullness approaching practical paralysis has characterized the markets in Iron and Steel throughout the country. Nearly every merchant and manufacturer is more busily and anxiously engaged in putting his finances into unassailable shape than he is hunting for new business. In fact, sellers are closely scrutinizing the credit of customers, and reject any business which does not seem absolutely safe. Sacrifice sales to secure funds are naturally not uncommon under the circumstances, but the low range of values established during the past few months leaves little chance for a further decline.

Where there is some chance that a prolonged stoppage in the Western mills would divert business into other channels, there is a disposition to hold off to await developments. Eastern mills in some branches hope for some little improvement in that way. As usual, there is a good deal of positive assertion on both sides involved in the Western wages contest. On the merits of the case there can be no question. But there are indications that the manufacturers are by no means unanimous. In some cases it is not a matter of choice, but of necessity. The head of one very large concern is quoted as saying that there will be no long contest. It seems to be generally understood that the works referred to will not hold out long. Others are expected to yield early from financial necessity. But some, and among them the strongest, will go into the fight with the determination and the ability to win. It would not be surprising to witness important accessions to the long list of non-union mills.

The meeting of the Steel Rail manufacturers which was held yesterday, with a full representation of the mills, did not justify the predictions freely made that there would be a complete rupture. The brief proceedings were harmonious.

The larger Coke operators in the Connellsville region, in their negotiations to close contracts with the furnace interests for the last half of the year, are finding the smaller producers quite a stumbling block. During the past four or five weeks the smaller operators have shown considerable anxiety to secure enough contracts to take their output for the last half of the year, and in order to do this have named attractive prices. Already some business has been done at \$1.45 per ton, f.o.b. cars in Connellsville region, and while the larger operators are reported as standing out for higher prices, it is plainly evident that they must meet these prices or lose considerable business. The smaller producers believe their interests will be better served by lowering the price of Coke and disposing of their output, thus insuring full time for their ovens. Coke is now being freely offered at \$1.50 @ \$1.55, and the advantages of the situation are clearly with the consumers. We are advised that the next step of the operators will be to reduce wages of the Coke workers. According to the terms of the sliding scale now in force in the Connellsville region, the authorship of which has generally been attributed to Andrew Carnegie, wages should have been reduced some months ago to correspond with reductions made in the price of Coke. The operators, however, postponed this action as long as they could, but with the continued decline in the actual selling price of Coke it can no longer be averted.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, Chicago, June 21, 1893.

Collections are very slow here in Pig Iron and other primary branches of the Iron trade, but have latterly been improving in the hardware trade. The recent failures that have occurred in this locality in the Iron trade have been precipitated solely by the scarcity of money and the difficulty in securing banking accommodations. The situation appears to be growing worse instead of better and it is asked on all sides, how soon can we hope to expect better times? The immediate future, however, contains so many elements of uncertainty and discouragement that it is impossible to penetrate the clouds and see what lies behind.

Pig Iron.—Local Coke Irons have been in reasonably fair demand. Notwithstanding the generally poor condition of business there seems to be a class of consumers who are in need of Iron of this quality, but they are, of course, taking it only in small quantities. On this kind of business our quotations fairly represent the market. If there were any large deals to be made, these prices could be shaded to some extent. Southern Coke Iron is practically without a market. The prices quoted below represent what the regular agents of Southern companies are asking, but whenever any business is done, it is rather at the buyer's figure than the prices named by the seller. While some of the large Southern companies are so well sold up that they maintain a very independent position, neighboring concerns are pressing sales at almost any price they can get. Like Superior Charcoal is improving, there having been a reduction during the past month of 3500 tons in the stocks on hand. Statistics, however, cut very little figure just now in influencing buyers. Quotations are as follows, cash, f.o.b. Chicago.

Lake Superior Charcoal.....	\$16.25 @ \$16.50
Local Coke Foundry, No. 1...	13.75 @ 14.25
Local Coke Foundry, No. 2...	13.00 @ 13.25
Local Coke Foundry, No. 3...	12.75 @ 13.00
Local Scotch.....	14.0 @ 15.00
Ohio Strong Softeners.....	16.00 @ 16.50
Southern Silvery, No. 1.....	15.00 @ 15.00
Southern Silvery, No. 2.....	14.50 @ 14.50
Southern Coke, No. 2.....	12.75 @ 13.00
Southern Coke, No. 3.....	12.25 @ 12.50
Southern, No. 1, Soft.....	12.75 @ 13.00
Southern, No. 2, Soft.....	12.25 @ 12.50
Southern Gray Forge.....	11.75 @ 12.00
Tennessee Charcoal, No. 1...	16.50 @ 17.00
Alabama Car Wheel.....	14.50 @ 18.85
Coke Bessemer.....	14.50 @ 15.00
Hocking Valley, No. 1.....	18.75 @ 17.00
Jackson County Silvery.....	16.75 @ 17.00

Bars.—The manufacturers of agricultural implements are coming into the market now in a little greater number. It is reported that one or two of them placed contracts for considerable quantities the past week, and several others will close negotiations this week, for very good lots of both Bar Iron and Soft Steel. Further transactions in this line are booked for the near future, as some consumers have been talking so long that they must have made up their minds to buy. Very low prices are reported to have been made on some of the Bar Iron contracts, approximating current rates for the whole of next year, which is unprecedented. The Soft Steel contracts are also going at very low prices. The shut down on July 1 promises to be very general. Local mills are not purchasing material now, on the ground that they will be closed in connection with mills in other parts of the country. Prices for immediate delivery range as before, from 1.45¢ to 1.50¢,

half extras, Chicago, on Bar Iron, and 1.60¢ to 1.65¢ on Soft Steel. Store prices on small lots are unchanged at 1.65¢ @ 1.75¢ for Bar Iron, and 1.70¢ @ 1.80¢ for Soft Steel.

Structural Material.—Business in this line is comparatively neglected, although two or three good sized orders have made their appearance the past week. Business of this character is now going to Eastern mills, as local manufacturers are not willing to meet the low prices originating there. Mill shipments are quoted as follows, Chicago delivery: Beams, 1.80¢ @ 1.90¢; Tees, 1.95¢ @ 2.05¢; Angles and Universal Plates, 1.75¢ @ 1.85¢. Small lots are selling at 15¢ @ 20¢ per 100 advance.

Plates.—Very little is reported in the line of Plates. The American Boiler Manufacturers' Association met here last week, and the proceedings in connection with the association absorbed the time of almost all the Plate trade of the West for the whole week, sellers as well as consumers. Quotations on mill shipments, Chicago delivery, are as follows: Tank Steel, 1.75¢ @ 1.85¢; Shell Steel, 2.05¢ @ 2.15¢; Flange Steel, 2.20¢ @ 2.30¢; High Grade Fire Box, 2.75¢ @ 5¢. Store prices are as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.20¢ @ 2.40¢; Shell, 2.35¢ @ 2.50¢; Flange Steel, 2.60¢ @ 2.80¢; Boiler Tubes, 67½ % @ 70 %.

Sheets.—There is nothing new to report in this line. Black Sheets are unchanged at 2.85¢ @ 2.95¢, Chicago, for No. 27 Common from mills. The jobbers have not yet fixed prices for small lots from stock for the season, but will probably do so soon. Galvanized Iron is still quoted at 70 and 10 % discount for Juniors on mill shipment and 70 % @ 70 and 2½ % on small lots. Sheet Copper is fairly steady at 30 and 5 % discount for small lots.

Merchant Steel.—Season contracts are still coming forward, but principally from the smaller class of consumers. The very large works are understood to be holding back to await developments. Prices are quite steady among standard makers, with mill shipments quoted as follows, Chicago delivery: Smooth-Finished Machinery, 1.90¢ @ 2¢; Open Hearth Spring and Smooth-Finished Tire, 2¢ @ 2.10¢; Iron-Finished Tire, 1.70¢; Ordinary Tool, 6¢ @ 7¢; Specials, 12¢ and upward.

Rails and Track Supplies.—The demand for Steel Rails is slight, inquiries recently received have been for small lots only. The volume of business, however, is sufficiently great to enable the local mill to make a steady run which will probably keep up through the balance of the year. No change is noted in prices, which are quotable at \$30 @ \$32, according to quantity. Iron and Steel Splice Bars are now selling at 1.60¢ @ 1.70¢; Track Bolts, with Hexagon Nuts, 2.55¢ @ 2.60¢; Spikes, 1.85¢ @ 1.95¢.

Old Rails and Car Wheels.—July 1 is approaching, and some of the railroads appear to be anxious to have a good amount of cash in their treasury rather than Old Iron Rails in their yards. Judging from occurrences during the past week, some would accept considerably under \$17 along their line, and on large quantities will give consumers delivery at various points as a concession. Buyers look forward to interesting developments in consequence of his state of affairs. Old Steel Rails are unchanged at \$10.75 @ \$12 for short

pieces and \$14 for long lengths. Small lots of Old Car Wheels have sold at \$14 25, but the usual quotations are \$14 50 @ \$15.

Scrap.—Everything in this line is very weak; consumers appear to be entirely absent from the market. Not only are the rolling mills making no purchases, but even the foundries are doing very little. It is probable that purchases could be made from dealers at a reduction of 25¢ per ton or more on the following nominal quotations, per net ton: No. 1 Forge, \$13; No. 1 Mill, \$9; Sheet Iron, \$5; Pipes and Flues, \$8.50; Axles, \$20; Horse-shoes, \$12; Fish Plates, \$14.50; Spikes and Bolts, \$12.50; Cast Borings, \$5.25; Wrought Turnings, \$7.25; Axle Turnings, \$9.50; Heavy Cast, \$10.50; Stove Plate, \$8; Malleable Cast, \$8; Mixed Steel, \$9.50, gross ton; Leaf Steel, \$16.

Metals.—Lake Copper is now selling at 11.25¢ in carloads, while casting Copper maintains its price at 10.50¢, with a fairly good demand from dealers generally. Spelter is quoted at 4 20¢ in carload lots, which is a little above last week's figures. Lead, on the contrary, is lower and is now quoted at 3.50¢ to the large trade.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., June 20, 1891.

The market is beginning to assume a decidedly holiday character, transactions being limited to covering early requirements, with little or nothing doing in late deliveries. Under such conditions it is difficult to say what the tendency is as regards prices, as there is not only no business, but there is no serious attempt to do business, either by buyer or seller. Of course, there are sellers in plenty, providing they could get reasonably satisfactory prices, but as that cannot be done, except to a very limited extent, they simply wait until there is a demand. This will doubtless be forthcoming after awhile, but to what extent and on what terms remains to be seen.

Pig Iron.—Good brands are scarce and command pretty full prices for such small lots as are called for, but the bulk of the deliveries are on old contracts, with no great disposition to enter into new engagements for large lots. The decrease in stocks combined with a decreased production are points in sellers' favor, which may assume great importance later on, and while, as yet, they only attract passing attention and have not stimulated buying, they have stiffened holders considerably. The coming month, however, is expected to be extremely light as regards consumption, and although it is expected that production will also show a further decrease, buyers are not inclined to make bids until they see how things will turn out after midsummer. As a matter of fact, there is nothing immediately in sight to lead to any change from present conditions, or from present prices, and as there is likely to be time enough to turn around before any kind of a movement gets well underway, neither side cares very much about discounting the future. Sales have been at about the following quotations for Philadelphia deliveries, and at nearby points accessible by water from the South 20¢ @ 30¢ less, but a good deal depends on quantity, delivery, &c.:

American Scotch, No. 1X... \$16.00 @ \$16.50
American Scotch, No. 2X... 15.00 @ 15.50

Standard Penna. (Lake Ore), No. 1x	15.00	@	15.50
Standard Penna. (Lake Ore), No. 2x	14.50	@	14.75
Standard Virginia, No. 1x	12.75	@	15.00
Standard Virginia, No. 2x	13.75	@	14.25
Virginia and Southern, No. 1x, Soft	14.25	@	14.50
Virginia and Southern, No. 2x, Soft	13.50	@	13.75
Standard Penna. and Vir- ginia Forge	13.00	@	12.25
Ordinary Forge	12.50	@	12.75

Steel Stock.—There is not much business doing, but there are sellers of moderate sized lots at \$16 25 @ \$16 50, delivered, for standard Bessemer, and \$18 @ \$18 25 for Low Phosphorus Iron.

Steel Rails.—No change from last week, prices being \$29 for standard Rails, and \$34 to \$36 for Girders; the latter being in good demand. Other descriptions dull and quiet.

Steel Billets.—Business appears to have pretty well ceased for the first half of the year. There has been some inquiry, and some sales in small lots, but large orders have not been forthcoming at the prices asked, and now buyers are inclined to hold off, in anticipation of doing better by the time they require new material. Manufacturers quote \$24, delivered, for June and July shipments, and 50¢ to 75¢ less for later dates, but so far as known without securing business or bids which they would feel at liberty to accept. The immediate feeling is a little bearish, but with any extended shut down in the West, a very sharp reaction would not surprise some well-posted people, but it all depends on the length of time the mills stop work.

Muck Bars.—There is not much doing, but prices are pretty steady at \$23.25 @ \$23.50, delivered. Holders are looking for a better demand during the next 60 days, and in some instances first-class Bars are held at something higher than the quotations usually given.

Bars.—Everybody in the business complains of low prices, light demand and slow collections. There never has been a time when prices were as low as they are to-day, and never a time when the outlook was more unsatisfactory. All this may change after midsummer, but there is nothing to indicate anything of that kind except that mills may suspend work longer than usual, or until stocks are so low that the demand must be large enough to enable manufacturers to secure better prices. At the present time 1.60¢ @ 1.65¢ are full quotations for city deliveries in carload lots and upward, and about 1.50¢ to 1.55¢ at interior points. Steel Bars 1.60¢ @ 1.85¢, according to quality.

Skelp—No change either in price or demand. Sales at 1 52 1/2¢ @ 1 55¢, delivered, but even at these low figures the market is not strong.

Plates.—Mills are doing fairly in this department, but at very low prices. The demand is chiefly for small and medium-sized lots, but these, with orders previously taken, keep the mills pretty well employed. There is nothing heavy inquired for, a few hundred to as to one of the smaller shipyards comprising most of the week's business, except for carload and smaller lots. There is nothing in sight likely to increase the volume of business for some time to come, and a more or less protracted shut down during the coming month can hardly be avoided, although some expect to take only a few days or a week to complete their repairs. Prices are very irregular and on fair-sized lots are frequently

lower than nominal quotations, which are about as follows for lots delivered:

	Iron.	Steel.
Tank Plates	1.80 @ 1.85¢	1.75 @ 1.80¢
Shell	2.10 @ 2.20¢	
Flange	2.70 @ 2.90¢	2.25 @ 2.40¢
Fire Box	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities		3.25 @ 3.75¢

Structural Material.—Nothing but small lots have been taken since date of our last report, and with the exception of several hundred tons required for a new building at Germantown Junction, there is nothing important in sight. Mills have a good deal of work on their books, however, and for the present will probably be able to run moderately full. Prices irregular, but usually quoted about as follows: Beams, Channels, or Tees, 1.90¢ @ 2 10¢, according to size of order; Angles, 1.80¢ @ 1.85¢; Universal Plates, 1.75¢ @ 1.80¢.

Sheets.—Not much doing and prices are very unsatisfactory. There is business enough at a price, but those who are determined to maintain quality find it difficult to obtain figures that will return a new dollar for an old one. The usual asking prices for best makes are about as follows:

Best Refined, Nos. 14 to 20	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26	3.15¢ @ 3.20¢
Best Refined, No. 27	3.30¢ @ 3.40¢
Best Refined, No. 28	3.40¢ @ 3.50¢

Common, 1/4¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about 1/4¢ lower than here named:

Best Soft Steel, Nos. 14 to 16	2 1/2¢ @ 2 5/8¢
Best Soft Steel, Nos. 18 to 20	2 1/2¢ @ 3¢
Best Soft Steel, Nos. 21 to 24	3 1/2¢ @ 3 1/4¢
Best Soft Steel, Nos. 25 to 26	3 1/2¢ @ 3 3/8¢
Best Soft Steel, Nos. 27 to 28	3 1/2¢ @ 3 1/8¢

Best Bloom Sheets, 1/4¢ extra over the above prices.

Best Bloom, Galvanized, dis. 70 and 5¢

@ 70 and 10¢

Old Material.—Dull, and prices hard to quote, as all depends on whether buyer or seller is most anxious to complete the trade. General quotations and a few sales at figures about as follows: Old Iron Rails, \$16 50 @ \$17, delivered; Old Street Rails, \$18 @ \$19; Old Steel Rails, \$15 @ \$15.50; No. 1 Railroad Scrap, \$14 50 @ \$15, Philadelphia, or for deliveries at mills in the interior, \$15 @ \$15.50, according to distance and quality; \$8 @ \$9 for clean new No. 2 Light Scrap; \$7 @ \$7.50 for old No. 2 Light Scrap; \$11 @ \$12 for Machinery Scrap; \$11 @ \$11.50 for Wrought Turnings; \$7 for Cast Borings, and nominally \$20 for Old Fish Plates, and \$13 for Old Car Wheels.

Wrought-Iron Pipe.—Demand light, and prices weak. Discounts nominally as follows, but on good sized orders 5% extra is not hard to secure:

Butt-Welded Black	57 1/2¢
Butt-Welded Galvanized	50¢
Lap-Welded Black	67 1/2¢
Lap-Welded Galvanized	57 1/2¢
Boiler Tubes, 2 1/2 inches	65¢
Boiler Tubes, 3 inches	67 1/2¢

Louisville.

LOUISVILLE, Ky., June 19, 1891

The market is very quiet owing to the closeness of the money market; consumers are urging that deliveries be postponed, and among the rolling mills a number are on the point of closing down. The trouble lies in the inability to get paper discounted; it is felt, however, that by the first of the month the situation will largely change and the iron market resume normal condi-

tions. We do not look for lower prices, but on the contrary feel that owing to the number of furnaces that have gone out of blast the tendency during the fall will be toward a slight advance, which will be maintained, as in amount it will not be sufficient to induce furnaces to go in blast. The number of failures in Iron circles has been very small and it has excited comment, as largely owing to the low prices that have existed for the last two years, so that there has been no chance for any sudden shock, as prices were not in position to decline. Pipe companies, who have been the largest consumers, are also showing a disposition to curtail their output, not because of lack of orders, but from the inclination of large corporations to give paper, which at the present moment cannot readily be converted into cash.

We quote for cash, f.o.b., cars Louisville:

Southern Coke, No. 1 Foundry.	\$12.75 @	\$13.25
Southern Coke, No. 2 Foundry.	11.50 @	12.00
Southern Coke, No. 3 Foundry.	11.00 @	11.25
Southern Coke, Gray Forge...	10.50 @	10.75
Southern Charcoal, No. 1 Foundry.	15.00 @	16.00
Southern Car Wheel.....	17.50 @	17.75
Spathite.....	11.50 @	12.50

St. Louis.

(By Telegraph.)

Office of *The Iron Age*,
Bank of Commerce Building, {
St. Louis, June 21, 1893.

Pig Iron.—The condition of the market to-day can be described as extremely quiet. There is, practically speaking, no market, as sales are limited to car-load quantities in nearly all instances. A local manufacturing concern placed an order for several hundred tons of No. 2 Foundry and No. 1 Soft, principally because the market seemed to them to be at its lowest point. Whether the future will prove this to be so is difficult to conjecture, but it certainly does seem like a good time to take advantage of the low prices now being offered. Locally, consumption shows a slight falling off, and the offerings are not so free as last reported. A feature of the market at present noticeable is the giving of four months' paper by concerns who heretofore have been cash buyers. This shows how the tight money market is having its effect on the Pig Iron market, as well as in other lines. A curtailment of production on the part of the furnaces and a like curtailment on the part of consumers has caused a decided lull in the market, and prices quoted below are for the most part nominal. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$13.00 @	\$13.50
Southern Coke, No. 2 Foundry.....	12.00 @	12.25
Southern Coke, No. 3 Foundry.....	11.60 @	11.75
Southern Gray Forge.....	11.25 @	11.50
Southern Car Wheel.....	17.75 @	18.25
Lake Superior Car Wheel..	17.00 @	17.50
Ohio Softeners.....	16.00 @	17.00
Missouri Charcoal, No. 1 Foundry.....	13.00 @	13.50

Bar Iron.—The demand for Bar Iron is decidedly light and mills are kept on the anxious bench to keep their wheels turning. Prices are weak and are gradually tending downward, without much hope of any immediate improvement. Mills quote 1.50¢, f.o.b. cars East St. Louis. Jobbers ask 1.60¢ @ 1.65¢, according to quantity.

Barb Wire.—There is absolutely nothing doing in this department. Mills and jobbers alike make the same

complaint—that business was never so dull before. Prices are unchanged, and while not notably lower are gradually tending that way. Mills quote \$2.10 for Painted and \$2.50 for Galvanized.

Wire Nails.—The remarks concerning Barb Wire are applicable to Wire Nails. Mills continue to accumulate stock, and it is feared that unless trade shortly improves some very low prices will be made to stimulate the placing of orders. At the moment mills quote \$1.50 @ \$1.55 in carload lots to jobbers.

Rails and Track Supplies.—There is some little business doing in Steel Rails, the demand running largely to the lighter sections. Prices are unchanged at \$31.50 @ \$32.50, according to quantity. In the way of Track Supplies there is no demand whatever. We quote Splice Bars, 1.70¢; Spikes, 2¢; Bolts, Square Nuts, 2 50¢, with Hexagon Nuts, 2.60¢. Old Iron Rails are neglected at \$17 @ \$17.50, East St. Louis.

Pig Lead.—Heavy offerings have caused a weakening in the price of this metal, which is now freely quoted at 3.35¢ for June and July delivery, with practically no sales at this low figure. The stringency of the money market is having its effect on this metal, and notwithstanding the excellent condition of the market, statistically speaking, prices are weak and almost certain to go lower.

Spelter.—There is nothing to say in this connection which would be likely to prove interesting. Offerings are made for deliveries extending over the balance of the year at 3.90¢, but there is absolutely no business doing. Stocks in smelters' hands are accumulating very rapidly, and it is difficult to see where any improvement can be expected.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., {
CINCINNATI, June 21, 1893.

The volume of business in Pig Iron seems to be reduced to its lowest terms. There is absolutely no buying for forward delivery, and only the current necessities of consumers are purchased in small quantities, mainly in single car lots, and they rarely reach as much as 500 tons. The absolute inability to obtain bank accommodations is the main cause of the stagnation in the trade, and there is no prospect that it will be any better in the early future. There is no urgency to sell Pig Iron for forward delivery, the main endeavor being to find cash buyers, and if there were any of these there is no doubt that they could secure much stock at lower prices, but no transactions have become public that would justify reduced quotations, although the whole market seems to be so far demoralized that quotations are little better than normal. The Iron Pipe works seem to be the only considerable melters of Pig Iron at present in this district, and they are not buying more at this juncture. Quotations are as follows:

Foundry.

Southern Coke, No. 1.....	\$13.00 @	\$13.25
Southern Coke, No. 2.....	11.50 @	11.75
Southern Coke, No. 3.....	11.00 @	11.25
Ohio Soft Stone Coal, No. 1....	16.00 @	16.25
Ohio Soft Stone Coal, No. 2....	15.00 @	15.25
Lake Superior Coke No. 1.....	15.00 @	15.25
Lake Superior Coke No. 2.....	14.00 @	14.25
Hanging Rock Charcoal, No. 1.....	18.50 @	19.00
Hanging Rock Charcoal, No. 2.....	17.50 @	18.00
Tennessee and Alabama Charcoal, No. 1.....	15.00 @	15.50
Tennessee and Alabama Charcoal, No. 2.....	14.00 @	14.50

	Forge.	Refined
Gray Forge.....	10.50 @	10.75
Mottled Coke.....	10.50 @	10.75
<i>Car Wheel and Malleable Irons.</i>		
Standard Southern Car Wheel	16.75 @	18.00
Lake Superior Car Wheel and Malleable.....	17.25 @	17.50

Baltimore.

BALTIMORE, June 19, 1893.

Financially this market does not seem to be in perfect accord with the Iron and Steel market in other parts of the country, as it has been singularly free from suspensions, assignments, or other disturbances of like character; even the smallest of buyers seem to meet their obligations with very gratifying punctuality. This is all the more strange on account of the fact that the Southern Iron market has been and is still looked upon with suspicion, as the margins of profit are small, and money has always been deemed scarce. With the exception of the Richmond district the collections have been very good for the last two or three weeks, although prior to that time they were quite hard. The market seems in some classes of goods, particularly in Plates and Tubes, to be in better condition than at any time during the year 1893. The quantity of business is slowly and steadily increasing, but we regret that we cannot speak as encouragingly of the prices obtained for this material.

Bar Iron.—Bar Iron is holding its own, which is the best that can be said of it. There are some indications that should labor disturbances not be serious some nice orders will be in the market. We quote from the mill Refined Bar Iron 1.70¢ @ 1.80¢; from store 1.80¢ @ 1.90¢.

Plates.—We are very glad to note that the material for the New York police boat, which will be built by the Maryland Steel Company, has been placed with the same Eastern Pennsylvania mill which secured through a Baltimore house the contract for the Plates for the Standard Oil Company's work mentioned in our last report. Our favorable remarks regarding Boiler Plates, as stated last week, can be considered as being in force at the present time. The condition of the Boiler shops is not uniform, however, some being extremely full of work while others have almost a clean floor. Our quotations for the week are: Tank Steel, 1.80¢ @ 1.90¢; Shell Steel, 2.10¢ @ 2.20¢; Flange Steel, 2.25¢ @ 2.40¢; Fire Box Steel, 2.40¢ @ 2.50¢; Marine Steel, 2.40¢ @ 2.50¢.

Merchant Steel.—The principal grade of this material which is moving is Tire Steel, although there is quite a good deal of Cold-Drawn Shafting being distributed through the South. This is not the time of the year in which much is expected to be done in this particular line, so that no discouragement can be felt at the fewness of orders. We quote as follows: Tire Steel, 2.10¢ @ 2.20¢; Spring Steel, 2.40¢ @ 2.50¢; Toe Calk, 2.20¢ @ 2.35¢; Crucible Tool Steel, 6 1/2¢ @ 7 1/2¢, according to the brand.

Tubes and Pipes.—Boiler Tubes seem to be bearing us out in the good words we said for them last week. Some favorable specifications have been placed the last week, principally, however, in anticipation of the July shutdown. Our quotations are: Butt-Welded Black, 57 1/2 and 10%; Butt-Welded Galvanized, 50 and 10%; Lap-

Welded Black, 67 $\frac{1}{2}$ and 10%; Lap-Welded Galvanized, 57 $\frac{1}{2}$ and 10%; Ordinary Boiler Tubes, 24-inch, 70%; Ordinary Boiler Tubes, 3-inch, 70 and 5%; Charcoal Iron Boiler Tubes, 31-inch, 65%; Charcoal Iron Boiler Tubes, 3 inch, 67 $\frac{1}{2}$ %, dealers and consumers getting 5% better prices from stock.

Boston.

Office of *The Iron Age*, 146 Franklin St., Boston, June 20, 1893.

Matters are quiet in the Iron trade. The movement is still heavy in the way of the completion of orders placed earlier in the season, but in the way of new business trade is quiet. But it is safe to conclude that the market is a little stronger since the publication of the June statistics last week, showing smaller stocks of Iron than on May 1, and also showing a decrease in the number of furnaces in blast as well as in the capacity of these furnaces. In Manufactured Iron trade is termed quiet, with only a few new orders for either Structural Iron or Iron for manufacturing purposes. But after all, prominent dealers say that every time they figure up their business, whether at the close of the month or at the close of the week, they find that more business has been done than they anticipated. There is still a good deal of interest manifested in the possibilities of labor troubles beginning on July 1, but after all, the feeling is increasing that the non-union mills would be able to produce about all the Iron needed in the event of serious strikes in the union mills.

The latest Pittsburgh reports say that the officers of the Amalgamated Association are very likely to have a new proposition for the adjustment of the differences between the Iron manufacturers and the members of the association. It is likely to be made in the form of a request from the association that the mills be shut down for a season sufficient to allow the trade to catch up. This might be done and the market relieved from the pressure of overproduction, while the wages of the men need not be touched. It is not generally believed, however, that the manufacturers can agree to any such proposition. Already they have suffered greatly through the competition brought upon them through the ability to undersell them by the non-union mills, an ability entirely the result of the lower prices at which labor is being obtained in the non-union mills. Shutting down might lessen the production in the union mills, but it would be only opening the market more thoroughly to the non-union mills, and probably give them the trade.

Pig Iron.—There is noted a better demand for Pig Iron in this market. Prominent dealers are noting more orders; whether it be the result of the foundry people all wanting smallish lots of Iron at once, or it really means an increased demand, these dealers are not able to say. Under the really good trade that the foundry people continue to have, it is not at all strange that they should all want Iron, and under the statistical outlook, referred to above, that they should conclude that it was time to buy some Iron. It is principally in Southern Iron that the better trade is noted, however, and such Iron is very steady in values: No. 1, \$15 @ \$15.50; No. 2, \$14 @ \$14.50; No. 3, \$13.50 @ \$14. These prices are for Southern Iron, ex-dock in Boston. Virginia Iron continues to sell quite readily, so far as it can be obtained, with

the market firm at \$15.50 for No. 1, and \$14 @ \$14.50 for No. 2. Pennsylvania Iron is attracting very little attention here, with the market on Iron at shipping port quoted at: No. 1, \$14.50 @ \$15; No. 2, \$13.50 @ \$14; Gray Forge, \$13 @ \$13.50. Spot lots would sell for some \$2 @ ton more. Ohio Irons are quoted here at \$17.50 @ \$18, for Iron delivered in Boston.

Bar Iron.—The Bar Iron market is steady, with a very fair trade. Mr. Blake's mill, at Warcham, is still reported doing well, with a good volume of orders. The market on ordinary New England Old Material Iron is quotable for Bars at 1.60¢ @ 1.65¢, from mill; from store, 1.65¢ @ 1.70¢; best Puddled Iron Bars 1.80¢ @ 1.90¢, from mill; from store, 1.95¢ @ 2¢. Norway and Swedish Bars are reported quiet, with not enough having arrived to affect the market. The quotations are at \$65 @ \$67 @ ton on Bars and Shapes.

Building Iron.—A quiet trade is noted in Structural Iron, with no heavy contracts being taken. Still, builders continue to be somewhat anxious for the forwarding of the iron due them on former contracts. At the same time dealers say that at the end of the month or the week they find that they have booked a pretty good trade. Quotations are not lowered in the least: Beams and Channels from mill, 1.90¢ @ 2¢; from store, 2.30¢ @ 2¢; Tees, 2.20¢ @ 2.30¢ from mill; from store, 2.40¢ @ 2.65¢; Angles, 1.80¢ @ 2¢, from mill; from store, 2.25¢ @ 3.35¢.

Steel, Steel Plates and Steel Rails.—The market on Steel is very steady in the way of values, so far as merchants here are concerned, with the demand only fair. The non-union Steel mills are likely to run right along, however, leaving the quarreling and the labor troubles to the union mills. The Pottstown Iron Company's mills are to run right along, stopping only two days for necessary repairs. The market on Steel is quoted at: Bessemer Steel, 2¢ @ 2.10¢; Tire and Sleigh Shoe, 1.90¢ @ 2¢; Sheet, 2¢ @ 2¢; American Cast, 6¢ @ 7¢; English Cast, 14¢ @ 15¢; American Steel Rails, \$29 at mill. The Steel Plate mills are not active, but after all it is admitted that the mills have some good orders. Quotations are retained at: Tank, 1.80¢ @ 1.90¢; Shell, 1.85¢ @ 1.95¢; R-fined, 2.05¢ @ 2.12¢; Flange, 2.10¢ @ 2.12¢; Fire Box, 2¢ @ 2.25¢.

Nails.—The position of Nails is steady, with a fair trade. Small lots of Cut Nails, both Iron and Steel, are quoted at \$1.50 @ \$1.60 @ keg, while large lots are quoted at \$1.45 @ \$1.50. Steel Wire Nails are quoted at \$1.65 @ \$1.70, to the trade here.

Pipes and Tubes.—The market on Pipe is fairly steady in values, but trade is not very encouraging so far as the manufacturers are concerned. Still there is an attempt being made to hold prices. But prominent dealers understand that there are considerable concessions being made on large lots. Locally and with the dealers there is a fair trade.

Scrap Iron.—There is no improvement to note in Scrap Iron. No. 1 Wrought is not quotable at above 50¢, but there are holders who will not sell at that price. Selections of No. 1, including Old Horseshoes, are quotable at 58¢ @ 60¢. Light Iron is very quiet, with the market at 33¢ @ 38¢, according to quality. Machine Scrap is dull,

with the market nominally quoted at 25¢ @ 30¢ for Cast, and at 30¢ @ 35¢ for Wrought.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, June 20, 1893.

The business situation here has been rudely disturbed within the last few days by the assignment of the Duquesne Tube Works Company and the appointment of a receiver for the Oil Well Supply Company, both concerns being manufacturers of Pipes and Tubes. The preliminary statements of assets and liabilities made by the concerns show conclusively that the tight money market was the prime cause of the failures. Had the money situation remained more favorable, it is believed that both concerns would have weathered the storm. The Oil Well Supply Company are said to have sunk considerable money in operating the Elba Iron Works. The concern secured control of this plant several years ago for the manufacture of Pipes and Tubes, and spent a great deal of money in improvements and repairs, and the low prices ruling for the class of product made prevented any large returns on the original investment. It is stated that both concerns will continue in operation if the creditors will grant an extension. Nothing definite has yet transpired looking to settlement of the wage scales. The Sheet manufacturers have met the Conference Committee of the Amalgamated Association and the different items of the Sheet scale have been gone over, with nothing accomplished so far. The Iron manufacturers are to meet the Conference Committee of the Amalgamated Association to-day at 2 p.m., in the Vandergrift building in this city. It is known positively that the workmen are prepared to accept a scale based on \$5 for boiling, and the statements of the members of the Conference Committee that they will stand out for the present rate of \$5.50 are looked upon as good-sized bluffs. It will doubtless be known in two or three days whether there will be a settlement without a strike. It can be set down as a certainty that some manufacturers at least will not sign the scale as it has been prepared by the Amalgamated Association to govern wages for 1893-94.

In regard to the Iron and Steel markets in general, perhaps the least said the better. As one in the trade puts it, the prices obtained in many sales nowadays depends largely on "the necessities of the seller and the leniency of the buyer." There is no standard price for anything and when buyers are prepared to put up cash or the equivalent, they come pretty close to naming their own figures, and are pretty certain to get the goods. The situation from every standpoint could hardly be worse, and the outlook is extremely discouraging.

Ferromanganese.—Prices are ruling at \$58 @ \$58.50 for 80% domestic, delivered at buyers' mill. No foreign is coming into this market.

Structural Material.—Pittsburgh has taken some 1200 or 1500 tons for shipment to a Western point, which is the only order of any consequence placed for some time. The usual run of small orders is coming in, and prices on this class of business are slightly lower. We quote beams up to 15 inches at 1.55¢ @ 1.65¢, f.o.b. cars Pittsburgh.

Angles and Universal Plates we quote at 1.60¢ @ 1.70¢; Tees, 1.75¢ @ 1.85¢, and Z Bars at 1.65¢ @ 1.70¢.

Muck Bars.—There is very little inquiry, with prices ruling at \$23.50 @ \$23.75 for best grades, delivered at buyer's mill.

Plates—Nothing is being done outside of small lots. The financial situation is such that makers do not seem anxious to make large contracts, on account of buyers being unable to offer as favorable terms of payment as desired. Prices continue weak, with the tendency in favor of still lower values, and are ruling about as follows: Tank, 1.50¢ @ 1.60¢, according to order; Shell, 1.70¢ @ 1.80¢; Ordinary Fire Box, 2.25¢ @ 2.50¢; Special, 3¢ @ 3.50¢; Flange, 1.80¢ @ 2¢.

Bars.—Steel Bars have touched the lowest price in the history of the trade, some business having recently been done on the basis of 1.45¢, half extras, at mill. From this it is evident that makers have good arguments to advance to the Conference Committee of the Amalgamated Association as to why there should be some concessions offered on the new scale. Demand is only fair, buyers not anticipating requirements, as was expected. Mahoning Valley mills will generally close on June 30 for repairs, and will remain idle until the wage scale has been arranged. In some quarters it is stated that the stoppage will be a prolonged one, as Valley makers have determined to obtain reductions in the scale, both in the boiling and finishing departments.

Wire Rods—A sale of Rods is reported as recently made that netted only a few cents over \$28, at maker's mill. There will likely be a general suspension of operations in Western mills during July. We quote Wire Rods at \$28.50, at maker's mill, with no very recent transactions reported.

Steel Rails.—Nothing doing in standard sections, with prices remaining at \$29, at mill. Considerable interest is being shown here as to the outcome of the meeting this week.

Pipes and Tubes.—The financial troubles that have overtaken the Duquesne Tube Works Company and the Oil Well Supply Company are referred to elsewhere in this issue. A meeting of the Wrought-Iron Pipe and Tube Manufacturers' Association will be held in the city this week. Demand is quiet, with prices somewhat irregular. The official discount list is not being observed to any considerable extent.

Merchant Steel—Some business has been done in season contracts with negotiations progressing favorably for the closing of additional contracts. The financial situation has undoubtedly interfered seriously with the closing of season contracts this year. We quote Bessemer Machinery, 1.75¢ @ 2¢, and Open-Hearth Spring at 1.90¢ @ 2¢; Tool Steel we quote at 5½¢ and upward, according to quality.

Wire Nails.—Indications point to a general closing of Western Wire-Nail mills during July, and possibly longer. It is known, however, that one and possibly two concerns in this district will keep in operation right along. The Wire-Nail market is probably in worse condition at this time than ever before in the history of the trade. There is little or no inquiry, and prices are down to a point that leaves little or no profit to the makers. We quote Wire Nails in carload lots at \$1.35, and this price

would be shaded for a good order with terms of payment satisfactory to the maker. Cut Nails are finding a moderate demand, with prices ruling at \$1.05 @ \$1.10 base for carload lots at mill.

Sheets.—Mills are generally well employed on old orders, some mills in the Wheeling and Mahoning Valley districts being sold up to July 1. Very few new orders are coming in, as the buying season is about over. The Black Sheet men have been in conference yesterday and to-day with the Amalgamated Association on the new wage scale. The outlook for a speedy settlement is not very encouraging. We quote Soft Steel Sheets as follows: No. 24, 2.50¢ @ 2.55¢; No. 26, 2.60¢ @ 2.65¢; and No. 27 at 2.70¢ @ 2.75¢. We quote Galvanized Best Bloom at 70% and 10% discount.

Wire.—There is a fair volume of business in small lots, with a good many season contracts remaining to be filled. We quote Four-Point Galvanized at \$2.35 @ \$2.40 and Painted at \$1.95 @ \$2 at mill.

Connellsville Coke.—The May output of the Connellsville region was 30,276 cars, aggregating 550,412 tons, as against 29,718 cars, aggregating 548,078 tons, in the preceding month. For the week ending June 10 there were 12,302 ovens in the region in blast and 5203 idle, with a total estimated production of 119,849 tons. Compared with the production of the previous week, this was an increase of 2892 tons. There is considerable activity on the part of operators to secure contracts for the last half of the year, with some concessions in prices over present contracts being offered. We quote Connellsville Coke at \$1.50 @ \$1.55 in tons of 2000 lb f.o.b. cars in Connellsville region.

(By Telegraph, June 21, 12.30 p.m.)

Pig Iron.—The stringency in the money market, coupled with the very light demand, has further weakened the price of Bessemer, and to-day the market is correctly represented by the quotation of \$13.25, Pittsburgh. On the part of makers there is no disposition to force their product on the market, while buyers are holding off until the wage scale has been settled, and as a consequence very little Iron is changing hands. Gray Forge and Foundry are dull at unchanged prices. We quote as follows:

Neutral Gray Forge.....	\$12.00	@	\$12.25, cash.	
All-Ore Mill.....	12.50	@	"	
No. 1 Foundry.....	13.60	@	13.85	"
No. 2 Foundry.....	12.60	@	12.85	"
Charcoal Foundry No. 1	17.00	@	18.00	"
Charcoal Foundry No. 2	16.50	@	17.00	"
Bessemer Pig.....	13.25	@	13.35	"

We note a sale of 3000 tons of Bessemer for June and July delivery at \$13.25, Pittsburgh, and 1500 tons for July and August at \$13.35, Pittsburgh. We also note a sale of 2000 tons Low Phosphorus Bessemer at \$17.

Steel.—The market continues quiet, with prices showing a weaker tendency. Steel can readily be obtained to-day for delivery in July and after at \$21.50, and this price would doubtless be shaded for a good order, with extended deliveries. However, buyers are staying out of the market and makers are not pushing their product. No business of consequence is expected to be

done until the wage scales have been arranged, which will remove much of the uncertainty now surrounding the future.

The Conference Committees representing the Sheet Manufacturers and the Amalgamated Association reconvened in the rooms of the Association of Iron and Steel Sheet Manufacturers last night at 8 o'clock. The meeting lasted until nearly midnight and adjourned without a settlement, and no date was set for another conference. The manufacturers insist that the 10 per cent. extra for rolling Sheets No. 22 and lighter be taken off, which has been absolutely refused by the men. The workmen ask that the prices for rolling in the new scale be adjusted to conform to the new United States standard gauge. This would involve the following changes over the scale now in force: Nos. 15 to 17 reduced from \$5.60 to \$5.55; Nos. 18 to 21, \$6.80 to \$6.75; Nos. 25 and 26 increased from \$8.80 to \$9.20; No. 27, \$9.60 to \$10; No. 28, \$10.40 to \$10.65, and No. 29 reduced from \$11.20 to \$11.15. The manufacturers agreed to this demand if the workmen would take off the 10 per cent. on No. 22 and lighter, but as this was refused, and nothing further being offered from either side, the meeting adjourned. If the present positions of the manufacturers and the workmen are maintained trouble will undoubtedly occur. The first meeting of the Conference Committees representing the Iron Manufacturers and the Amalgamated Association was held yesterday at 2 p.m. in the Ferguson Building. Beyond an interchange of views as to the new scale, nothing was accomplished. The meeting adjourned until 2 p.m. to day at the same place.

Cleveland.

CLEVELAND, OHIO, June 20, 1893.

Iron Ore.—The market continues remarkably dull. Sales for the past week have been limited to the imperative demands of furnace men needing Iron for special orders. During the week 43,000 tons of Ore have been sent forward to the furnaces, as compared with 21,000 tons for the corresponding week of 1892. The non-Bessemer Ores on the docks are being rapidly sold at \$2.80 @ \$3.15 per ton. The Bessemer mined last year are practically sold up. The demand for Ores, while limited, is still significant of the orders soon to be placed; but it is practically certain that Bessemers will continue to be sold on the basis of \$3.75, f.o.b. Cleveland. Indeed, buyers decline emphatically to consider any other figures. Dealers look forward with much anxiety to the future developments in the market. They scarcely expect to realize \$4 per ton for Bessemer Ores that sold one year ago for \$4.50, but they consider the 75¢ per ton cut as a bit exacting. As transportation rates are just now particularly firm the claims of the furnace men are not wholly unjustified. Shippers are now willing to pay 70¢ per ton from Escanaba to Cleveland, whereas three weeks ago it seemed to

be a settled fact that 55¢ per ton would be the price for season contracts. We hear of a sale of 10,000 tons of good Bessemer Irons, quite low in phosphorus, at \$3.80 per ton, f.o.b. Ashtabula. Buyers are still approaching the market cautiously, but seem to have more faith in the conditions surrounding it than they have manifested for many weeks.

Pig Iron.—There have been indications of improvement in both the supply and demand during the past ten days, and Bessemer Irons are being asked for this week with considerable freedom. Some Bessemers have been sold at \$13.40 @ \$13.50, Cleveland, July delivery. Gray Forge Irons have also braced up a bit and a few sales at \$12.25 per ton are recorded. Dealers are still perplexed over the figure that Southern companies are assuming in the market, especially in the handling of Foundry Irons.

Scrap.—The market could hardly be considered in a more deplorable condition, as is evidenced by the fact that No. 1 Railroad Wrought is offered at \$12 per ton, Cleveland; Old Car Wheels have experienced something of a boom during the past week, although quotations have clung very closely to the established price of \$14 per ton; Wrought Turnings are in some demand at \$7.50, and Cast Borings at \$5.50; Old Axles, at \$19.50, are in somewhat better demand.

Old Rails—The market, while moderately dull, gives indications of early improvement. We hear of a sale of 3000 tons of Old Americans at \$18.50, Cleveland.

Nails.—The assignment of the Baackes Wire Nail Company has temporarily affected the local market. The assets are so far in excess of the liabilities that the assurance of the company that business will soon be resumed seems almost superfluous. Prices are unchanged.

Metal Market.

Pig Tin.—Since the date of last week's review the price of Straits Tin for prompt and current month delivery has been carried from 19.90¢ up to 20.25¢; July delivery was raised to 20.42½¢ and remote deliveries relatively as high on paper. More recently prices have reacted to 20.12½¢ for prompt delivery and quite as much on futures. Meanwhile, the records have shown a considerable turnover of contracts, involving more or less switching of old speculative deals, some distinctly new *bona-fide* business and more than a suspicion of "wash" trades not uncommon in speculative circles. This has facilitated deliveries on old sales made at much higher prices than those ruling and helped along new business with consumers and interior dealers to some extent; but further additions to the surplus stock have, nevertheless, taken place. In any event nearly, or quite, 2000 tons have arrived here since the beginning of the month, and there are now afloat from Europe about 1000 tons, while the highest estimates of deliveries to consumers and interior jobbers during the month do not exceed 1800 tons. The actual consumption is believed to be less than 1600 tons, and, as far as can be calculated, the surplus in dealers' and consumers' hands, as well as first-hand holdings, has increased considerably. Surface appearances are that the bulk of unsold supplies in first hands is well controlled, and that it is the in-

tention of the leading holders to reap the full benefit of the McKinley tariff as expeditiously as possible prior to the extra session of Congress. Still, there was some sign of softness at the close, spot stock having been sold on Wednesday at 20 10¢ @ 20 14¢, and June delivery at 20 14¢, one day's notice.

Copper.—Regarding the rumored sales of Lake Superior Ingots at 10 14¢, nothing has transpired except that persons supposed to be well informed deny knowledge of any contracts having been made at that price. The fact remains, however, that the inroads made by producers of Electrolytic Copper of late are at least annoying to Lake Superior producers, and the latter have a reputation for protecting regular customers. During the past week fully 250,000 lb of Lake Superior Ingots have been sold at from 10 14¢, and that price would seem to fairly reflect inside market value at the present time. Some few parcels were taken at as high as 11¢ for export. Fair quantities of Electrolytic at 10 14¢ @ 10 14¢, and common casting Copper at 10¢ have been sold, and offerings at those prices are fairly liberal. At the close bids of 10 14¢, regular terms, were refused for Lake product.

The monthly production of Copper in the United States since July has been as follows, the first column giving the aggregate returns from the reporting mines, which include the principal lake, Montana and Arizona producers; the second being the metal from pyrites and from a number of smaller outside sources, being estimated:

American Product.

	Reporting mines.	Outside sources.	Total.
1892.	Gross tons.	Gross tons.	Gross tons.
July.....	9,294	924	10,218
August....	10,807	870	11,677
September.	9,710	994	10,704
October....	9,688	1,289	10,957
November..	9,888	1,036	10,924
December..	9,872	1,174	11,046
Total.....	59,239	6,287	65,526
six months.			
1893.			
January...	9,187	989	10,176
February..	8,213	1,042	9,245
March....	9,085	1,321	10,386
April.....	11,775	1,042	12,817
May.....	12,706	1,042	13,748

The product of the foreign reporting mines was as follows:

Foreign Reporting Mines.

	Gross tons.
1892.	
July.....	6,358
August....	6,855
September.	5,478
October....	6,476
November..	6,759
December..	7,696
Total six months.....	39,655
1893.	
January.....	5,736
February..	6,762
March....	6,896
April.....	6,913
May.....	6,806

The exports of fine Copper from the United States were as follows:

United States Exports.

	Gross tons.
1892.	
July.....	3,450
August....	1,545
September.	1,458
October....	3,114
November..	3,897
December..	4,482
Total six months.....	17,980
1893.	
January.....	3,171
February..	1,615
March....	2,834
April.....	3,450
May.....	4,482

Pig Lead.—Fully 1500 tons of Common Domestic have been sold at from 3.75¢ down to 3.60¢, and the official bullion price has dropped to 3.55¢. The purchases were chiefly of Lead for late June and July shipment from the

West, and the selling indicated that matters of finance have not been remote as a factor in hurrying sales. Still there is more than a vague suspicion that stocks at producing points were larger than generally reported of late, and that accumulations there have had something to do with the anxiety to sell. At the close, 3.55¢ bid, 3.60¢ asked, was quoted.

Spelter.—Deals here have been on a very moderate scale, and the demand at present is extremely tame. Prices are difficult to gauge in the absence of business, but 4 20¢ @ 4.30¢, delivered, would seem to be a fair range of quotations on Western brands.

Antimony.—Business has been moderate and prices are somewhat irregular, with 9 7/8¢ @ 10¢ quoted for Hallett's, 10 1/2¢ @ 10 1/2¢ for L.X. and 10 1/2¢ for Cookson's.

Tin Plate.—The market is dull and weak. Canners and canmakers are not only very indifferent buyers, but it would appear, have, in some instances, sought to have deliveries deferred. From other sources the demand is strictly perfunctory. Late arrivals add considerably to the stock on spot and the assortment is fuller than it has been for some time past. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., \$5.40; Bessemer full weight, \$5.35: light weights, \$5.02½ for 100 lb, \$4.90 for 95 lb, \$4.85 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60; Siemens Steel, IC basis, \$5.70; IX basis, \$6.85. Charcoals—Melyn grade, IC, \$6.40; Crosses, \$8; Allaway grade, IC, \$5.62½; Crosses, \$6.80; Grange grade, IC, \$5.70; Crosses, \$6.85. Charcoal Ternes—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.25; do., 20 x 28, \$14.50; Dear grade, 14 x 20, \$5.35 @ \$5.37½; do., 20 x 28, \$10.50 @ \$10.70; D. R. D. grade, 14 x 20, \$5.10; do., 20 x 28, \$10.30; Wasters—S. T. P. grade, 14 x 20, \$4.87½; do., 20 x 28, \$9.25; Abercarne grade, 14 x 20, \$4.87½; do., 20 x 28, \$9.20.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, June 21, 1893.

Pig Iron.—Complaints of very dull trade are quite general, and special transactions are becoming relatively numerous. There have been one or two moderate-sized Cast-Iron Pipe orders placed, but otherwise nothing of consequence is reported. We quote Northern brands at \$14.50 @ \$15 for No. 1; \$13.75 @ \$14.50 for No. 2; \$12.25 @ \$12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, \$13.75 @ \$14.50 for No. 1; \$12.50 @ \$13.50 for No. 2; \$12 @ \$12.25 for No. 3; \$12.25 @ \$12.50 for No. 2 Soft, and \$12.75 @ \$13.25 for No. 1 Soft. Gray Forge remains \$11.75 @ \$12.50.

Spiegeleisen and Ferromanganese.—The market is very dull, with foreign Ferromanganese nominally unchanged at \$57 @ \$57.50.

Steel Rails.—No business of any consequence is recorded. A brief meeting of the Rail Association was held yesterday. The proceedings were harmonious.

Track Material.—We quote: Spikes, 1.80¢ @ 1.90¢; Fish Plates 1.45¢ @ 1.60¢; Track Bolts, Square Nuts, 2.30¢

@ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered.

Manufactured Iron and Steel.—The St. Luke Hospital contract is to be placed toward the end of this week and it is expected that there will also be given out a contract for about 500 tons of Structural Material for a new factory on Twenty-third street. There is a moderate amount of small local business. Some of the Eastern Plate mills show a disposition to abstain from cutting, the motive being to await developments in the West. We quote: Beams up to 15 inch, 1.75¢ @ 2¢; 20-inch, 2.10¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.80¢ @ 1.90¢; Tees, 1.90¢ @ 2¢; Channels, 1.85¢ @ 2¢, on dock. Steel Plates are 1.70¢ @ 1.90¢ for Tank; 1.95¢ @ 2.10¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.60¢ @ 1.9¢, on dock, and Common 1.50¢ @ 1.60¢; Soft Steel Bars are 1.50¢ @ 1.60¢; Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered; Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.80¢ @ 1.90¢, delivered; Cotton Ties, 80¢ @ 85¢ per bundle, at mill.

Old Material.—We quote Old Iron Rails, nominally, \$15 @ \$15.50, and Steel Rails, \$12 @ \$12.50.

Markt & Co. of 79 to 85 North Moore street, New York, have become agents in the United States of Eicken & Co., crucible tool steel manufacturers of Hagen, Germany, being represented by E. Vorster. They manufacture a series of tool steels and a special Tungsten steel, which has been tested with favorable results by P. Pryibil, the Morse Twist Drill & Machine Company, Baackes Wire Nail Company, Colt's Armory, Pratt & Whitney and the Sprague Electric Elevator Company. The Eicken works employ over 800 men and produce annually 20,000 tons of steel.

CLEVELAND.

(By Telegraph.)

The Iron Ore business has not been so completely depressed for many years. The Norrie Mine will shut down in a few days. About 2000 men are employed. The company have nearly enough Ore mined to supply orders, and prefer quitting operations to bringing down surplus Ore for which there is only a prospective sale. There have been no sales in the last few days, although lake freights are in the buyers' favor. The Escanaba rate seemed firmly fixed at 65¢ Wednesday, and although shippers were holding for 70¢ many charters were made. "A general depression seems imminent," said a leading dealer to-day. "The Norrie Mine is only one of the many mines that owners cannot afford to operate if the present dearth of orders continues. The coal market is feeling the effect of the general depression in Iron Ore circles and many vessels are returning light.

The Pig Iron market is dull, although dealers say that Bessemer Irons are in fair demand at \$13.40, Cleveland. Some sales of Gray Forge Iron at \$12.25 are also reported. The Scrap Iron market is wretchedly dull, and a small transaction in Old Americans at \$18.50 is announced.

Judge Acheson, at Pittsburgh, has dismissed the case of L. H. Bristol against the Scranton Steel Company, W. W. Scranton and Walter Scranton.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, June 21, 1893.

In Pig Tin prices there has been an advance to £89.10/- for prompts and £86.5/- for three months' futures, although trading has fallen off to small proportions. Cash Tin is very sparingly offered and operators are very cautious about trading in futures, owing to doubts about the course of silver legislation. Holders of Tin on the spot are reluctant sellers, in view of lowness of stocks here and light shipments from the Straits. Latest dealings were at £89.10/- for prompts and £85.15/- for three months' futures.

Copper has ruled somewhat higher, with quite general buying early in the week and subsequent realizations due to adverse American advices. Cash warrants are becoming less abundant, owing to persistent buying by a large firm who are believed to be operating for Paris "bull" traders. Considerable "short" interest has been covered, owing to the late purchases for French account. Late sales of furnace material include 100 tons Montana Matte, ordinary, at 9/1½; 900 tons Argentiferous Montana Matte at 9/4½, and 200 tons Argentiferous Montana Matte at 9/6. Spot stocks decreased 339 tons, and visible supply 995 tons. Closing quotations on Merchant Bars were £45 for prompts and £45. 7/6 for three months' futures. Best Selected English, £48. 15/.

In the Tin Plate market there is no improvement. Business is chiefly in small lots for home trade and a few favorite brands for San Francisco. Prices in the Liverpool market are as follows:

IC Charcoal, Alloway grade.....	13/3 @ 13/9
IC Bessemer Steel, Coke finish.....	12/0 @ 12/3
IC Siemens.....	12/3 @ 12/6
IC Coke, B. V. grade 14 x 20.....	11/9 @ 12/6
Charcoal Terne, Dean grade.....	11/9 @ 12/6

Pig Lead market has been quiet, but prices are steady at £9. 7/6 for Soft Spanish.

Spelter has been quiet and prices are barely steady at £17. 12/6 for Ordinary Silesian.

There is a better feeling in the Steel trade, owing to the placing of some heavy contracts recently.

Pig Iron is also more active, with speculation livelier at higher prices and some scarcity of Midland sorts. Scotch Warrants advanced to 42/-, Cleveland to 35/3, and Hematite to 45/3.

The Conference Committees appointed by the manufacturers and the Amalgamated Association to take up the sheet wage scale convened in Pittsburgh in the rooms of the Iron & Steel Sheet Manufacturers' Association on Monday, the 19th inst., at 10 a.m. The manufacturers' committee was composed of W. C. Cronemeyer of the United States Iron & Tin Plate Mfg. Company, Demmler, Pa.; B. M. Caldwell and W. T. Graham of the Extra-Standard Iron & Steel Company, Bridgeport, Ohio; J. G. Battelle of the Piqua Rolling Mill Company of Piqua, Ohio; N. E. Whitaker of the Whitaker Iron Company, Wheeling, W. Va.; B. F. Jennings of Jennings Brothers & Co., Limited, Allegheny, Pa., and George G. McMurtry

of the Apollo Iron & Steel Company, Pittsburgh, Pa. W. C. Cronemeyer was appointed chairman and John Garrett secretary for the manufacturers and J. C. Kilgallon for the workmen. The proposition of the manufacturers to strike out of the present scale the 10 per cent. extra charged for rolling sheets No. 23 and lighter is being vigorously opposed and is the chief question at issue between the manufacturers and the workmen. An all-day session was had on Monday, but nothing was done further than an interchange of opinions between the two sides. The committees reconvened on Tuesday morning at 10 a.m. at the same place and were in session for several hours, but nothing definite was accomplished. As it was desired by M. M. Garland and J. C. Kilgallon of the Amalgamated Association to attend the conference meeting with the iron manufacturers to be held in the Ferguson Building, Pittsburgh, at 2 p.m., the meeting was adjourned to convene again at 8 p.m. the same evening. It is the desire of both sides to reach a satisfactory agreement without a strike, although the points at issue between the sheet manufacturers and their employees are quite serious.

The Pennsylvania Steel Company.

In a circular letter to the stockholders of the Pennsylvania Steel Company, Luther D. Bent, the president and one of the receivers of the company, has outlined the plan of reorganization as proposed by the committee having the matter in charge. The plan provides for the creation of a new mortgage upon the property of both the Pennsylvania and the Maryland Steel Companies, and an issue of 6 per cent. bonds to the amount of \$9,000,000. Of this issue, \$3,000,000 is to be reserved for the retirement of existing mortgages and \$1,000,000 for future capital requirements, the remaining \$5,000,000 to be issued at this time and the holders to have the privilege of converting their bonds into 8 per cent. preferred stock at any time within five years from the date of issue, the company reserving the right at any time after the five years of redeeming any portion of the bonds not so converted, at 103 per cent. of par value.

The bonds to be issued at once are to be offered pro rata to the shareholders at the rate of 85 per cent. of their par value, the right to subscribe terminating July 20, 1893, and the subscriptions to be paid in installments, the date of the final payment being fixed for April 15, 1894. Mr. Bent concludes his letter with a recommendation and indorsement of the plan on behalf of the Reorganization Committee and the Board of Directors.

The report of Expert Little, attached to the letter, makes a very favorable showing, the joint assets of the two companies being \$17,783,218.04, while the total liabilities are only \$14,723,658.40, leaving an excess of assets over liabilities of \$3,059,559.64.

We are advised that the report that the Junction Iron Company of Mingo Junction, Ohio, would remodel their nail factory for the manufacture of structural shapes is without foundation. No such move is contemplated by the firm.

One million and a half gold has been ordered for import. There is a better feeling.

HARDWARE.

Condition of Trade.

WITH THE ADVANCE of the season it is natural to expect a falling off in the volume of general business, but a fair trade is reported, principally from retail merchants whose business in many sections of the country is in excellent condition, they being apparently unaffected by the financial conditions which are influencing the large trade. A considerable volume of business is thus being done, and in all parts of the country large quantities of goods are entering into consumption. A good many manufacturers are still well occupied on orders, but the majority are preparing for the summer dullness. While there is a good deal of complaint in regard to collections there is a commendable disposition on the part of many merchants to make exceptional efforts to settle their accounts promptly, knowing that this will be appreciated by those from whom they purchase in view of the existing stringency of the money market. Prices on the whole are without important change, but in several staple lines the tone of the market is weak and irregular. Manufacturers are, however, prudently refraining from endeavoring to force goods on the trade by means of concessions in price, and, as a rule, in Shelf Hardware former quotations are quite generally maintained.

Chicago.

(By Telegraph.)

The Shelf Hardware trade has been very good for some time, and the first mails this week indicated further improvement. Country merchants are now coming in to see the fair. A very considerable number made their appearance last week, probably as many as in all previous weeks combined. Jobbers say that they do not find them coming in to buy any considerable quantity of goods, yet nearly every one makes out a bill for some little stock. The demand now is of a general character including the whole line of Hardware. Staple goods are also doing better. Builders' Hardware, however, is considerably behind past seasons, showing that building improvements are not being pushed with much vigor. Prices show no special change, except that Wire Cloth is growing still scarcer and those

who have stock now ask \$2.25. Poultry Netting is also very firm and in comparatively light supply. Collections have improved in Shelf Hardware, but are not yet what they should be and what jobbers would like to see. The volume of business in Heavy Hardware is less than last month, but in some directions trade is a little better. The pleasant weather continues, and while the trade in heavy wagon material is fully as large as in past seasons, quite a number of manufacturing consumers report their business quiet and are consequently purchasing very much less stock than usual.

St. Louis.

(By Telegraph.)

Jobbers are beginning to complain, and state they are now feeling the effect of the tight money market. Salesmen are not sending in very large orders, and the local demand is disappointing. Jobbers are not overburdened with large stocks, however, as they have bought sparingly during the last two months, and are now in good shape in this direction. The outlook is encouraging so far as the crops are concerned, and business is not likely to improve much until the crops begin to move. Seasonable goods are, of course, in good demand, but prices of Barb Wire, Plain Wire, and Wire Nails are very weak, and show signs of going lower. Collections show improvement during the past week.

Notes on Prices.

Cut Nails.—The demand for Cut Nails is light and diminishing and prices also show evidence of further receding. The market in the East is represented in a general way by the quotation of \$1.05 on carload lots at mill, but offers have been made and some sales effected at a somewhat lower figure. Small lots from store in New York are held at about \$1.35. Many of the mills are preparing for the usual shut down in July for inventory, repairs and general overhauling. The condition of the market will not unlikely in many cases induce a longer stoppage than usual.

Chicago, by Telegraph.—Manufacturers of Cut Steel Nails are in receipt of a fair amount of business, but trade is by no means large. Specifications are being held back to some extent on old contracts, which also makes business rather quiet and causes some anxiety for the receipt of fresh orders. The retail trade in the extreme Northwest has been cut off by the very low freight rates now ruling from Wheeling

to Duluth by rail and lake. The Wheeling manufacturers are reported to be quoting very low prices in this vicinity also, but it is stated that such prices are only made on an average above base, which will give the manufacturers some little advantage. Prices on factory lots here are now about \$1.20 to \$1.25. Jobbers quote small lots from stock \$1.30.

Wire Nails.—There has been little change in the general situation during the past week or two, but the market is, perhaps, on the whole, in a somewhat better condition. It has not, apparently, been affected by the embarrassment of the Baackes Wire Nail Company, and it is understood that the company's stock of Nails are being held at good prices, which are somewhat in advance of the lowest prices recently prevailing. Some of the mills also are withdrawing their extreme quotations and refusing to meet the lowest prices of some of their competitors, their impression being that with the stoppage of the mills during July the market will be relatively clear of Nails, which should have a strengthening influence on prices. In anticipation of this shut down a number of orders are also being received from the trade. At the present time our former quotation of \$1.35 for carload lots at mill still fairly represents the market, notwithstanding the fact that during the past week it has been slightly shaded.

Chicago, by Telegraph.—Wire-Nail manufacturers state orders are coming in more freely from outside points. The smaller jobbers throughout the Northwest are sending in orders without solicitation; large buyers here, however, are reported to be well stocked, having taken in considerable quantities when the break in prices occurred some two or three weeks back. The indications now seem to point to stiffer prices. Agents have been advised within the past few days that there will be a pretty general shut down of the factories on July 1, which will so heavily curtail production that they think a slightly better price should be asked for delivery after that time. The general quotation on factory lots is still \$1.50, Chicago, but some of the mills referred to are naming \$1.52 $\frac{1}{2}$. They expect that this will stiffen the market, but it remains to be seen whether the trade is not so well stocked up that the restriction of production contemplated will be easily endured. Jobbers report a better inquiry from their trade now that prices have receded. They quote \$1.60

in a regular way and \$1.55 in mixed carloads.

Barb Wire.—The Barb-Wire market is sluggish, the volume of business being only fair and prices giving some indications of weakness. We still quote \$2.45 to \$2.50 for carload lots at mill, with concessions in special cases.

Chicago by Telegraph.—The factories are now catching some of the business which they lost early in the year. Manufacturers report the demand remarkably good for this season, keeping up at a time of the year when it usually falls off. Prices are unchanged at \$2.15 for Painted and \$2.55 for Galvanized from factory, and \$2.30 to \$2.70 for small lots from stock.

Foster's Knife Sharpener.—This article is described in another column. It is put on the market by John Chatillon & Sons, 85-89 Cliff street, New York, and is sold by them to the trade at \$3 per dozen, subject to a discount of 40 per cent.

Cordage.—The Cordage market shows but little change since our last report. The demand is moderate and prices show no special change, though they are still influenced by the fact that raw material is a little lower. Some of the manufacturers connected with the National Cordage Company are again in the market. The Binder Twine market is firm with a fair demand. Quotations on Cordage in large lots f.o.b. factory or New York are as follows, subject to a discount of 1½ per cent. for cash:

	Basis.
Manila.....	\$0.08½
Sisal.....	.07
New Zealand.....	.06½

Wire Rope Snatch Block—This Block was described last week, and is manufactured by the Boston & Lockport Block Company, Lockport, N. Y., and Boston, Mass. It is sold from the list printed below, which is subject to a discount of 25 per cent.:

Size Sheave. Inches.	For Rope.	Iron Bushed.	Ford's Patent Bushed.	Metaline Bushed.
10.....	5/8	\$16.00	\$17.00	\$19.00
12.....	5/8	18.00	19.00	21.00
14.....	3/4	20.00	21.00	23.00
16.....	7/8	33.00	34.50	38.00
18.....	1	38.00	39.50	44.00

Forg's Door Catch.—P. Forg, Somerville, Mass., is manufacturing this article, a description of which appeared last week. It is sold from the following list, which is subject to a discount of from 20 and 5 to 20 and 10 per cent.:

No.	Per gross.
10, with Round or Square Brass Striker Plate.....	\$ 6.25
10½, with Round or Square Brass Striker Plate.....	6.85
11, with Round or Square Brass Striker Plate.....	7.50
11½, with Round or Square Brass Striker Plate.....	6.85
12, with Brass Striker Plate.....	11.25
13, " Iron " " "	15.00
14, " " " " "	18.75

Per gross extra.
Nickel-Plated Strikers for No. 13..... 4.85
" " for No. 14..... 5.00

Handy Web Halter.—This article was described a week or two since as put on the market by Covert's Saddlery Works, Farmer, N. Y. It is made in three styles, which are listed at \$3.34, \$3.75 and \$4.60 per dozen. These prices are subject to a discount of 33½ per cent. to the trade.

Street Letter Box No. 14.—Samuel C. Tatum Company, Cincinnati, Ohio, are putting this article on the market, a description of which was given in a recent issue. It is sold to the trade at \$75 per dozen, subject to a discount of 40 per cent.

Boss Calf Wrist Supporter.—H. H. Perkins Mfg. Company, Kewanee, Ill., are manufacturing this article, which was illustrated in a recent issue. It is sold to the trade at 75 cents per dozen; 15 cents per dozen additional by mail. Terms f.o.b. Kewanee, 60 days; 6 per cent. cash in 10 days; 5 per cent. cash in 30 days; 4 per cent. cash in 60 days.

Glass.—The market is without interest, dull and featureless, with but a small amount of Glass changing hands. A conservative policy is being pursued by dealers in the matter of extending credits, satisfied to do less business until the financial horizon brightens. At the regular meeting of the National Window Glass Company, held at Chicago last week, the general situation was discussed, but no change in list or prices was made. Under the present condition of affairs it is not at all improbable that all the factories will be closed down before July 1. A large number of contracts with importers of foreign Glass expire July 1, and until then there is little likelihood of any advance in prices. Trade in all kinds of Window Glass is very quiet, with no change in prices. We understand that every Plate Glass factory in the country is closed, an arrangement agreed to by all the companies with a view to stop production and reduce the present accumulated stocks. Demand has improved a little with favorable weather, but did not keep up with the weekly production of about 182,300 feet. Quoted prices remain unchanged, as follows: American Window Glass, 2000 boxes at one time, 80 and 10 and 10 per cent. discount; carloads, 400 boxes, 80 and 15 per cent. discount; less quantities than carloads, 80 and 10 per cent. discount. Freight allowed on car lots and over, not to exceed 17½ cents per 100 pounds; less than car lots, f.o.b. at shipping point. French Window Glass, 75 and 10 and 5 per cent. discount. American Plate ranges in price from 50 and 10 and 7½ per cent. discount to 60 and 5 per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

Massachusetts Hardware Dealers' Association.

THE MASSACHUSETTS HARDWARE DEALERS' ASSOCIATION held their regular monthly meeting and dinner at the American House, Boston, on the evening of June 14. President Hiram G. Janvrin presided, and a large proportion of the members were present. These meetings are distinctively social in their nature and the best of good-fellowship exists. Dinner is announced promptly at six o'clock, Boston members for the most part coming directly from their places of business, while those from other parts of the State assemble in the reception room, to which all members repair for a social half hour before dinner.

After partaking of a bounteous repast, cigars were lighted and the minutes of the last meeting were read. Letters of regret were read from gentlemen who had been invited to speak, but who were unavoidably detained. Among these were W. H. Williams, president of the New York Hardware Club; Charles E. Adams of Lowell, president of the Massachusetts State Board of Trade; and N. P. Hayes of New Bedford, Mass. Mr. Hayes, in his letter of regret, humorously remarked that he did not know as he had anything particular to talk about, but as hatchets were uppermost in every one's mind, he should have talked about them.

A committee had been appointed at the previous meeting to prepare a schedule of prices to be presented to the association, at which it would be desirable to sell such standard goods as Cut and Wire Nails, Sash Weights, various brands of Building Paper, &c. In presenting the report the chairman of the committee stated that the wholesale houses and manufacturers had been seen, and that they were willing to sustain these prices to consumers. The acceptance of the report by the association was followed by a general discussion of the subject, in which some interesting points were brought out. A prominent Boston house had established a base price on Cut Nails, to which they had strictly adhered without the loss of customers, as follows:

1 to 5 kegs.....	\$1.75
5 to 10 kegs.....	1.70
10 to 20 kegs.....	1.65
20 kegs and over.....	1.60

The representative of this house considered it a wrong position to take, selling goods without a profit.

Three Boston concerns had agreed at the beginning of the season to sell Screen Wire Cloth at prices not lower than the following:

In full rolls, 2 cents per square foot.
In 50-foot lengths, 2½ cents per square foot.
In less quantities, 3 cents per square foot.

These prices, it was stated, had been successfully maintained.

Another Boston merchant stated that he had fixed a base price for Nails from which there was to be no deviation. One of his salesmen told him a builder wanted 40 kegs of Nails, and that if he could not make a lower price than the established one he could not sell him the rest of the bill of Hardware. The builder was allowed to buy his Nails elsewhere, but came back and bought his Hardware, giving as his reason that he knew no money had been made on the Nails, and that he was not going to give that dealer a chance to make up the profit on the Hardware bill. The merchant further stated that customers preferred to have goods sold at a uniform price by all dealers, so that they might have the assurance that they could get no lower prices by shopping around.

The opinion was expressed that if all the retail traveling men were taken off the road, and customers were obliged to come to the stores to buy, instead of having their trade solicited, it would result in better prices being obtained for goods. It seemed to the speaker that the object of the merchants was to cut one another's throats, or else to make a large showing in the yearly sales without regard to profits. The matter was finally laid on the table to receive further consideration at a subsequent meeting, as among other reasons it was not considered best by merchants outside of Boston to attempt to sustain certain prices in their respective towns, where there were other merchants not members of the association.

The representative of *The Iron Age* congratulated the association on the formation of the organization and the work already done, and assured them of the deep interest *The Iron Age* felt in anything that might be done by them in the future toward the betterment of the Hardware trade. The meeting then adjourned to meet in September.

The association was organized March 15, 1893, and held its first meeting April 12, the membership now numbering 70. The rapid growth is due to the interest taken by the retail trade in the movement, and also to the untiring efforts of a number of the charter members.

Boston Wholesale Hardware Association.

A MEETING was held June 14 at the Young's House, Boston, by the wholesale Hardware merchants, which may result in the formation of a permanent organization. The subject was discussed at a social dinner participated in at that time, and committees were appointed to take the matter in charge.

DWIGHT SLATE MACHINE COMPANY, Hartford, Conn., who do a large business in building special machinery, have increased the capacity of their factory about 25 per cent. during the past year, and are now employing 65 men.

Correspondence.

FROM A GENTLEMAN in Virginia we have the following forcible and interesting communication in reply to an article by a "Western Banker" in regard to paying bills with local bank checks, and also to the complaints made in the same issue by several Hardwaremen in regard to sales to their customers by manufacturers and jobbers:

To the Editor: What with the extreme dullness of business and the constant state of dread one is kept in by the predictions of a financial earthquake, we feel the necessity upon us of having some diversion in the way of criticising two of your correspondents in your issue of June 8. But inasmuch as neither of them give their names I must name them from the subjects they write upon—viz., BANKING AND RETAILING Goods. I will therefore call the first "Banker," and the other "Retailer."

"Banker" raises a bitter complaint against the country merchants, of which "Retailer" is doubtless one, for paying their bills to Eastern wholesale houses with checks on "country banks," greatly to the annoyance of the clerks in his bank; and "Retailer" complains of the manufacturers' agents and jobbers' salesmen who leave what he, a retailer, thinks the paths of righteousness, and sell his customer, the consumer, what he thinks he is rightly entitled to sell him, thus cutting into "Retailer's" legitimate profits to a distressing extent.

Evidently neither of your correspondents have read human nature as the poet did who wrote:

"All the world's a shaving shop
And every man's a barber."

Which couplet is based upon the idea upon which most business is transacted—viz., that each man does his own business in the way best suited to himself, regardless of what others may justly or unjustly regard as their rights. Upon this issue he stands or falls, and "Banker" must urge some better reason than the inconvenience it causes his clerks before he will get the community to consent to suspend so convenient a custom as that of paying bills with checks.

CHECKS ON COUNTRY BANKS.

Now, whether mine are considered "country" checks or not I do not know, but I plead guilty to having doubtless caused this gentleman's clerks, or some others, a great deal of annoyance, for I have found it very convenient to instruct the bookkeeper to draw up checks on our bank for all bills due on any given date, and remit them, instead of going to the bank and worrying the clerk there with having to draw 10 or 12 checks, or else going to the Post Office and get the same number of money orders or postal notes, to say nothing of the saving incurred. No thought ever came to me

on the subject that I was inconveniencing any one, any more than there would were I to take a night train that I was thereby causing the engineer, fireman, conductor and brakemen to be up all night when they might otherwise be at home asleep.

And furthermore, I do not know that there is any class of men in the community who are so closely indentified with but know less of the requirements of business than bank clerks, their principal concern being the balancing of their books and getting off from work as early in the afternoon as possible that they may see the game of ball, or play tennis, while the clerks in mercantile houses are still worrying over the difficulties of business too numerous to mention.

Now "Banker" has the remedy of this matter, in so far as his grievance goes, in his own hands—viz., by refusing to take checks for less than \$5 or \$10, and a country merchant will not send his checks many times after having them returned to him.

SELLING TO CONSUMERS.

As to "Retailer," there is very little consolation which can be vouchsafed him. Selfishness rules the world and will continue to do so until the end of the world, and will continue to do so until the millenium comes. Where a manufacturer or jobber finds it to his interest to sell a consumer he will do it regardless of all the published protests of the retailers, and if "Retailer" ever gets to be a manufacturer or jobber he will do the same thing, just as "Banker" would send in his checks on country banks if he lived in the country, regardless of the slighting remarks which he is sure—from having heard them—the bank clerks will make about the matter.

Now, having taken the liberty of writing you my views thus, it may seem unreasonable to suggest silence to others, but I will venture to suggest to both of these your correspondents that they might as well be "whistling jigs to a milestone" as writing on these subjects. Both these evils of which they complain have "come to stay," and have become part and parcel of the business of the country as much so as the necessity for having commercial travelers, which is the cause of more expense to the wholesale trade than all other expenses combined, but which will now never be done away with while business is carried on, though (except, possibly, in cases of new articles being introduced) there are no more goods sold than there would be without them.

There is this difference between your correspondents, viz.: "Banker" has the remedy for his complaint in his own hands, as suggested, if he has the courage to apply it, but "Retailer" has no remedy whatever for his complaint except that of quitting business. While not wishing to appear inconsiderate of the grievances and ills of others, I will commend to these gentlemen that Hibernian injunction:

"Just be aisy, gentlemen, and if you can't be aisy, then be as aisy as you can."

Export Notes.

IN VOLUME OF TRADE with Mexico the United States undoubtedly leads all the other nations, but this is due in great measure to advantageous natural conditions and facilities of communication. There is certainly ample opportunity for an enlargement of our trade with that country, and the conditions seem to be auspicious for organized, wise and energetic action on the part of our manufacturers looking to such increased trade. The industrial advancement of Mexico during the last ten years has been marvelous, and the country is exceptionally rich in undeveloped resources. The increased attention which is being given by our manufacturers to Mexican markets promises excellent results.

Statistics of imports into New South Wales for 1891 show that in Agricultural Implements the United States shipped to that colony \$35,467 worth. She also supplied Hardware to the extent of \$502,747. Other American goods furnished in quantities were Gas Fittings, Furniture, Wearing Apparel, Canned Goods, Kerosene and Oils, and Lamps, of which the large bulk of the imports in that line were furnished by the United States. Most of the light Buggies used in New South Wales are also of American manufacture.

By the last mail from Australia, we learned that up to May 15, 14 of the leading banks in Australia have failed and that this means the locking up of over \$400,000,000. Of this amount fully one-third represents deposits made by residents in the United Kingdom, while the remaining two-thirds is by colonial residents.

This, of course, means the locking up of an immense sum of money and bad times for their coming winter (our summer); that sales have fallen off in a very marked degree, and that money is so costly it is almost impossible to get it out of the country districts, but for the future the trade of the country presents an encouraging view. Their harvesting and wool seasons have been most bountiful. The wheat crop will probably show a surplus available for export of 500,000 tons, representing a value of \$15,000,000. The wool clip shows an increase of 45 per cent. over that of five years ago and a large increase in value over that of last year.

Together with this, the amount of gold mined is largely in excess of any previous 12 months, so that with the recuperative powers of "our island" it is thought the time is not far distant before they will be entering a new and lasting era of prosperity.

Since the above was received we learn by cable that four of the suspended banks have reopened, and it is thought by many that eventually no creditor will lose anything in the organizations that are now taking place.

World's Fair Exhibits.

MILLER LOCK CO., Philadelphia, are situated in Block 3, Section P, ground floor of the Manufactures Building, where samples are shown of their Jackson Non-pickable Rim and Mortise Latches; Front and Vestibule, Store Door, Hotel and Office Door Locks; Colonial Latches; Chest, Drawer and Cupboard Locks; Jackson Non-pickable Post Office Lock Boxes; Jackson Fancy Scandinavian Bronze Padlocks; Jackson Automatic Padlocks; Cycler's Sets, &c., Champion Six-Lever Padlocks; Champion Keyless Locks for drawers, cupboard, locker, chest, &c.

MCCAFFREY FILE COMPANY, Philadelphia, are located in Section P, Block 3 of the Manufactures and Liberal Arts Building, where they make an elaborate display of Files and Rasps. A large frame 10 feet high and 13 feet wide is surmounted by a handsome sign, giving the name and address of the firm and also representations of the medals awarded to them at the Paris and Philadelphia expositions, together with the one awarded by the Franklin Institute. Mounted on the frame in an artistic manner are Files and Rasps, so arranged as to form an American eagle, with wings extended, and surrounded by numerous stars and other ornaments. Underneath the eagle are two American flags, crossed, with the stars and stripes accurately represented by Files of various lengths and sizes. In addition to this frame, there is a handsome plate glass oval showcase, containing samples of Files and Rasps from the raw steel plates, out of which they are made, to the finished articles, some of which are 30 inches in length. Here is shown an extensive assortment of carpenters' Files for sharpening saws, including those used in the lumbering business, varying in size from 3 inches to 16 inches, all nicely cut and tempered; also numerous Files used in machine work, including flat, hand, half-round, round, square, rectangular, three-cornered and knife Files, with the different cuts ranging from dead smooth to the roughest Files made. Again, there are Rasps and Files for horseshoers, shoemakers and other mechanics to keep their tools in order. Single and double cut Files, bastard or common cut, second cut, smooth and various other kinds are also exhibited, together with cabinet Rasps and shoe Rasps, planing-knife Files for lumbering, parallel, flat and taper Files, Files with handles and without handles, double-end Files and double tapers, circular Files for use in mandrels and shafts, Files for gasfitters, short pieces with countersunk holes in the center to enable them to be fastened, and numerous other styles and makes.

IOWA FARMING TOOL COMPANY, Fort Madison, Iowa, have a space fronting on the main aisle in the northeast part of the Manufactures and Liberal Arts Building, near Section P. The company's exhibit occupies a space 20 x 20 feet. In this space is a platform, back of which are two wall cases about 10 feet high, of walnut, properly lined. There is also another wall case on the south side of the space. In these are arranged in proper order a portion of the company's line of Forks, Hoes and Rakes. Near the case on the south side of the space is a panel about 10 feet square, on one side of which are shown Forks, Hoes and Rakes unpolished and partially made. On the other side is shown polished Fork Tines, Hoes and Rakes, unhandled, arranged in an ornamental manner. The exhibit also includes a plate glass case about 6 x 10 feet, in which an ele-

gant assortment of their fine goods is shown, including a large number fully gold plated. Gold leaf and brass signs are also conspicuous. The space is enclosed with a fine brass railing.

THE EXHIBIT of McIntosh, Huntingdon Company, Cleveland, Ohio, consists of their Sunol Wheels, two of which are mounted and in motion. They also display their Crypto Geared Ordinary, and the Crypto Front Driving Safety. They also show a full line of the Lucas Lamps, manufactured by Joseph Lucas & Son, Birmingham, England. The company's exhibit is located in the gallery of the Transportation Building directly opposite the Golden Entrance.

THE EXHIBIT of Whitman & Barnes Mfg. Company, Akron, Ohio, is in annex to Agricultural Building, I-5, No. 191. Here are displayed Mower and Binder Knives, Sickles and Sections, Spring Keys and Spring Cotters, Twist Drills, Wrenches, Thresher Teeth, light Drop Forgings, Automatic Oil Engines, Cultivators, Hay Tools, Lawn Mowers and repairs and supplies for Agricultural Implements.

THE LUNKENHEIMER COMPANY, Cincinnati, are located in Section 25, Column O-24, Machinery Hall, facing the space allotted to Italy, and near the main aisle. The company have been to considerable expense and trouble in preparing their exhibit, which creditably represents their complete line of goods. The display also includes a very fine casting, which the company refer to as one of the most difficult pieces of core work ever accomplished in this line.

WM. READ & SONS, Boston, make a fine exhibit of their New Mail Bicycles, their position being a prominent one and showing the goods off to excellent advantage.

ALASKA REFRIGERATOR COMPANY, Muskegon, Mich., have an exhibit in Section P, Block 4, Manufactures Building, consisting of a two-story pavilion and nearly a full line of Refrigerators.

MCKINNON DASH & HARDWARE COMPANY, Buffalo, N. Y., and Columbus, Ohio, exhibit their line of Fenders and Dashes in the gallery of the Transportation Building, Section B. Their Canadian house, at St. Catharines, Ont., in the Canadian department of the Transportation Building, also exhibit Dashes, Fenders, Whip Sockets and Carriage-Top Trimmings of all kinds, which are manufactured at that point.

IN THE MANUFACTURES BUILDING, Section Q, Block 3, on the same platform with the Marlin Fire Arms Company, is the exhibit of the Ideal Mfg. Company, of New Haven, Conn., makers of Cartridge-Loading Implements for Rifles, Pistols and Shot Guns. The space allotted is 20 square feet, on which is a handsome square antique oak Cabinet, mounted with a pyramidal case having four plate-glass sides. The top of case is surmounted with a plain brass metal quadrangular sign, from each corner of which projects a brass rod, these rods meeting about 2 feet above, and supporting in the center a nickel-plated Ideal Revolving Tool, which, together with the sign, can be seen a good distance away. Within the case is a pyramid covered with black cloth, on which are arranged in an artistic manner the various Implements manufactured by the company. M. H. Marlin will represent the company at the fair.

FAYETTE R. PLUMB of Frankford, Philadelphia, is issuing an invitation to his friends and others interested in his goods to inspect his exhibit located in the Manufactures Building, Section

P, Block 3. The invitation is printed from an engraved plate, and a view of his factory buildings appears at its head.

MILFORD MFG. COMPANY of Milford, Ohio, show a line of their Suction Carpet Sweepers in the Manufactures Building, northeast section, near the great Garland Stove. This is a Sweeper in which the brush does not touch the carpet, but by rapid motion draws the dust or dirt into the box from the carpet. The springs and gearing are all on the outside, leaving the inside of the Sweeper perfectly free from obstructions. Eight styles are made, but all embody the same principle.

THE BRIDGEPORT GUN IMPLEMENT COMPANY, Bridgeport, Conn., and 313-315 Broadway, New York, make a handsome exhibit in the Manufactures Building, Section Q. A paneled table runs the length of their space, upon the top of which are showcases with standing glass lids. These cases are filled with Loading and Cleaning Tools and Forstner Auger Bits. At the back and above the showcases are upright cases reaching nearly to the ceiling, with five glass doors. The central cases are devoted almost entirely to Loading and Cleaning Instruments, special prominence being given to their new Loading Shell Outfits. The other cases show Forstner Auger Bits arranged in attractive patterns. The cases are of quartered oak, the ornamentation on them being produced entirely with the Forstner Bits.

Trade Topics.

Buying Direct.—A house in Iowa refer to the fact that there is an increasing tendency on the part of manufacturers and retailers to deal direct, avoiding the jobber, or middleman wherever practicable, a matter concerning which they say:

To do this the Hardwareman is compelled to buy in a little larger quantities, but it pays. We find that in our own business we are buying at least 50 per cent. more goods direct from manufacturers than we did a year ago, and in many cases save freight, boxing and cartage charges over jobbers' prices, all of which are important items in the matter of cost. Boxing and cartage are usually 1½ to 4 per cent. Everything else being equal, the dealer who saves these important items will have the inside track.

A Trade Question.—We are in receipt from a Western house of the following inquiry:

Kindly advise through your columns in regard to the following: A buys 25 kegs of Nails to be shipped January 20, terms July 1, or 5 per cent. off February 1, or 1 per cent. per month for prepayment. Factory being behind with orders sent 5 kegs at the date specified, 10 kegs March 10 and 10 kegs April 25. Please state if A is entitled to the 5 per cent. discount by paying for the goods when received.

In reply we would say that A is apparently entitled to the 5 per cent. discount on paying for the goods on receipt. The delay in shipment by the manufacturer should not, of course, deprive A of any of his privileges under the contract, among which is the right to deduct a discount of 5 per cent. 11 days after the date at which the Nails were to be shipped. Assuming that the Nails are received by A not later than

11 days after shipment, it is obvious that he has the privilege of deducting this discount as above.

Worthless Goods.—Referring to the complaint made in a recent issue by a merchant in regard to worthless goods, we have the following from a Hardwareman in the West, who signs himself "Hardwareman-Afraid-of-a-Fraud:"

We had a similar experience in Belting and other Rubber goods and hear of other Hardwaremen who have had the same trouble. I write this in order to ask if there is not some way by which the Hardware dealers of the United States can post each other with the names of those who do business in a fraudulent way.

Trade Items.

THE HARDWARE, lumber and kindred building interests of Massachusetts are having the State canvassed for the purpose of obtaining the co-operation of these trades in securing the passage of a lien law by the Legislature. At present a lien can be taken on buildings for wages, but not for material furnished.

AN ERROR was made in the last issue in the statement that the Illinois Glass Company of Rockford, Ill., manufacture the Manny Lemon Juice Extractor. It is made by the United States Glass Company, with main office at Pittsburgh, but the inventor and patentee is a resident of Rockford.

WE REGRET TO LEARN of the death early in the present month of George E. Bliss, a retired Chicago Hardware merchant. Mr. Bliss was long a member of the firm of Kellogg, Johnson & Bliss, who were succeeded by Bliss, Bullard & Gormly. Mr. Bliss not long since retired from the latter firm, and the name was then changed to Bullard & Gormly. Mr. Bliss was widely known throughout the Hardware trade and highly esteemed for his many sterling qualities, not the least of which was his perennial good nature.

THE DETROIT DYNAMO COMPANY, Detroit, Mich., issue a circular devoted to "Nineteenth Century Figures," designed for house numbers, which are supplied in various finishes, as follows: Plain Bronze, plain Brass, antique Copper and Brass, old Copper, old Brass, Bower-Barffed and nickel plated. Roman Metal figures for the same purpose are furnished in nickel plate 2, 2½ and 3 inches in size.

RUSSIA CEMENT COMPANY, Gloucester, Mass., and 95 Reade street, New York, are distributing a booklet containing much new matter concerning Le Page's Liquid Glue. They have added a line of Mucilage and Sizings, the latter for paper hangers' use, also for carpet designers and fresco artists, decorators and designers of wall papers, &c. These goods may now be obtained in various quantities from gallons to small packages in convenient forms for instant application.

C. H. Hawkins, manager and buyer of the Cutlery department of Hermann Boker & Co., arrived from Europe June 17 on the steamer "Etruria." He has been abroad on business connected with this house since early in April.

THE NEW U. S. CIRCUIT COURT OF APPEALS has just handed down an opinion in the case of Robert P. Scott of the Sinclair-Scott Company, Baltimore, vs. Louis A. Sayre, Newark, N. J., sustaining the plaintiff's patent on a peach parer, and affirming the damages against the defendant for infringement. In connection with this decis-

ion we are advised by Mr. Sayre that he has decided to make a material reduction in the price of his improved Monarch Peach Parer, which he has had on the market for the past two years. This machine he refers to as unaffected by the recent decision and not liable to any suit for infringement.

GEORGE H. FERRIS of South Norwalk, Conn., has sold out his Hardware business in which he has been engaged for the past 20 years. Mr. Ferris is desirous of securing an opening where his experience would be valuable, and intimates that he might invest some money in the business if it were to his advantage to do so.

F. A. BOKER, senior partner of the firm of Hermann Boker & Co., 101-103 Duane street, New York, returned to Germany, May 30, on the steamer "Aller." He made an extended visit to the Columbian Exposition in addition to the usual business matters attended to here.

THE ST. JOSEPH PUMP COMPANY, St. Joseph, Mo., are making an addition to their already extensive plant. The addition referred to will be a two-story brick building, 35 x 90 feet. This addition has been necessitated by the fact that the company have outgrown their present capacity, and the new building will be entirely utilized as soon as it is finished. E. A. King, secretary and general manager, has been with the company from the start, and much of the success attained by them is due to his efforts.

DAME, STODDARD & KENDALL, 374 Washington street, Boston, have obtained the sole agency for the United States of the "Celebrated" Cutlery made by Jonathan Crooks & Son, Sheffield, England. The assortment of Pocket Knives and Razors made by this concern is, we are advised, very complete. The arrangement made by Dame, Stoddard & Kendall allows a substantial reduction in prices, which fact will be appreciated by the trade at large. They have also taken the sale of all the goods made by L. Weyersberg & Son, Solingen, Germany, to the quality of which they especially refer. These goods will bear the name of the manufacturers, and will, it is stated, be made of the best material and fully warranted. Other lines of goods now controlled by this house are: Johan Engstrom's Swedish Razors and Knives, D. S. & K. Hub brand American Pocket Cutlery, D. S. & K. Hub brand Razors, R. Murphy's goods, Bray Fly Books, G. M. Skinner's Trolling Spoons, Patent Floats and Sinkers, Neverbreak Lines and Rods, &c.

WM. M. CALHOUN, manager of the gun department of Hermann Boker & Co., has returned to New York from Europe, arriving June 19, by the steamer "Freisland." He left here March 30, on business connected with his house.

VAN WAGONER & WILLIAMS COMPANY, 14 Warren street, New York, and Cleveland, Ohio, though still in the hands of the receivers, are doing an excellent business, and hope that before long their affairs will be so adjusted that the receivership may be terminated and the property returned to the company's hands. They refer to their capital as unimpaired and their assets for the purpose of continuing the business as largely in excess of their liabilities. Meanwhile, their factory is being operated as usual, C. S. Van Wagoner and William H. Williams and their former force of salesmen and clerks retaining their several positions, Mr. Van Wagoner being in charge in Cleveland and Mr. Williams in New York.

WASHBURN & MOEN MFG. COMPANY, Worcester, Mass., have been awarded the contract for 1,500,000 pounds of Copper Feeder Wire by the Brooklyn City Railroad Company. This, they claim, is the largest order ever given any one concern by a street railway company. It is equivalent to 180 miles of Wire.

Australian Letter.

WE ARE INDEBTED to Alfred Shaw Co., Queen street, Brisbane, for the following valuable information in regard to the position of American Hardware in Queensland:

The demand for American Hardware is about stationary as compared with English and German. The total sales are much less than they used to be, on account of the collapse of the building boom in the coast cities. This was entirely artificial, the inflation being caused by a too free supply of imported capital. The sales of Hardware are now about one-third less than the average of the ten years ending 1890. The decrease is partially due to a general fall in cost prices, but this is balanced somewhat by higher customs duties of protective tendency.

I. *The American manufacturer has a virtual monopoly in*

Axes,	Scythe Snaths,
Long hdl. Shovels,	Emery Wheels,
Wringers,	Oars,
Axe Handles,	Corn Shellers,
Pumps,	And various no-
Windmills,	tions.
Wheel Stock,	

II. *The American manufacturer has the bulk of the trade in*

Harvesters,	Cultivators.
Mowing Machines,	Mineral Lubricat-
Lawn Mowers,	ing Oils and
Egg Beaters,	Mincers.

III. *The American manufacturer competes about equally in*

Hand Saws,	Barb Wire,
Saw Files,	Heating and Cook-
Wrenches,	ing Stoves and
Bronzed Castings,	Edge Tools.

IV. *The American manufacturer does a part of our trade in*

Springs,	Lamps,
Axes,	Burners,
Bolts and Nuts,	Lanterns,
Electroplate,	Chimneys,
Curled Hair,	Wicks,
Varnish,	Sewing Machines,
Mixed Paints,	Electric Supplies,
Scales,	Rifles,
Fishing Tackle,	Ammunition,
Spades,	Plows,
Shovels,	Hay Rakes,
Rubber Hose,	Axle Grease.

V. *The American manufacturer is so far "out of it" in*

Bar, Hoop and Chaff Cutters,	
Angle Iron,	Horse Gears,
Bar Steel,	Cream Separators,
Cast Steel,	Sheep Shears,
Sheets and Plates,	Bicycles,
both Iron and Steel,	Cast Hollow Ware,
Horseshoes,	Baling Hoops,
Wrought Pipes,	Wood Screws,
	Rubber Sheet,

Sheet Lead,	Iron Bedsteads,
Shot,	Fuse,
Fencing Wire,	Powder,
Brushware,	Sheet Copper,
Cutlery,	Dry Colors,
Wire Nails,	Paints in Oil,
Chain,	Galvanized Goods,
White Lead,	such as Buckets,
Galvanized Cor-	Smiths' Bellows,
rugated Iron,	Binder Twine,
Rabbit Netting	Brass Foundry,
(sold by the 100 miles),	Wire Rope.

We anticipate your coming into competition shortly in many lines of the last list. Please understand, we have no sentiment in the matter. We simply calculate the pound at \$4.84 and act accordingly. To this port, Brisbane, your sailing freights are about equal to London steamer rates, involving a difference of, say, $\frac{1}{2}$ per cent. in insurance and, say, $1\frac{1}{2}$ per cent. in interest. The credit terms in England are more liberal than your manufacturers give, and it is easier to dispense with the services of the middlemen at the port.

The recent bank failures have upset business to a certain extent, but we in Queensland do not fear the future. Last year our imports were £4,408,601; our exports were £9,170,408, more than twice as much, and no community can be badly off with these figures.

Our public debt to England is £30,000,000, the interest on which, at 4 per cent., is £1,200,000. Deduct this from our export surplus and you will have a net surplus of £3,500,000—say, \$18,000,000.

There is a fine opportunity for the introduction of American capital to exploit our street railways, which are still in the horse-car stage. There is no local capital at present available for conversion and John Bull does not yet understand electric roads.

Travelers' Day.

THE BOARD OF DIRECTORS of the Columbian Associated Travelers met at the Tremont House, Chicago, last Saturday. Letters were read from Mr. Delahaye, secretary-general of the commercial travelers of France; James Davies, secretary of the Commercial Travelers' Association of Victoria and Australia; and Alfred H. Whitehouse, a commercial traveler of New Zealand. The president reported having invited President Cleveland to attend the celebration during the week of July 24 to 29, and that the Chicago Hussars will act as escort and take charge of the down-town parade on July 25. President Higinbotham has promised that the fair grounds shall be illuminated and open until midnight on commercial travelers' day, Wednesday, July 26. A request has also been made for permission to give a monster display of fireworks on that night to cost \$10,000. Letters have been received denoting the intention of different bodies of traveling men to be present. Forty-seven bands of music, including some of the most noted and best organized in the United States, Great Britain, France, Germany, Holland, Australia and New Zealand and Canada, will furnish music. In Festival Hall an elaborate free band concert will be given.

The United Commercial Travelers of America, Council No. 2, of Cincinnati, have contracted with the Monon road to take 500 of its members. The Iowa State Traveling Men will turn out in full force, and Columbus, Ohio, will send the Fourteenth Regiment Band. Traveling men expect that the parade will include over 50,000 travelers.

Manufacturing.

T. B. HARKINS FOUNDRY COMPANY, Bristol, Pa., besides their round Sash Weights and standard round Cast Washers, are putting on the market Cast Iron and Wrought Iron Handle Dumb Bells, Solid Shot and Throwing Hammer Heads. The above sporting goods are neatly packed in barrels, each article being carefully wrapped in paper to prevent scratching in shipment. The company are also making Cast-Iron Skillets or Spiders and Wire Rope Clamps.

E. T. BARNUM, Detroit, Mich., has been awarded the contract for the Wrought Iron Fence inclosing a cemetery at Waldoboro, Me.

SHERWOOD MFG. COMPANY, Buffalo, N. Y., advise us that business has never been better with them, and that their only difficulty so far this season has been to fill orders as promptly as customers desire.

THE UNITED STATES MFG. COMPANY of Stoughton, Wis., is the name of a new concern recently organized for the manufacture of Cash Registers, on which the company hold numerous patents. The machine is provided with four different adding departments operated from one keyboard, from which any amount may be registered ranging from 1 cent to \$39.99. All of the four adding departments may be operated at once, thus permitting each clerk to show the sum total of his sales each day, or the different keys may be used for certain departments, as, for instance, in the drug trade one key may show the sales on patent medicines, another on prescriptions, and the other two soda and cigars, or any sundries which may be selected.

THE ARCADE MFG. COMPANY, now occupying their new and commodious quarters at Freeport, Ill., are making a slight change in the manufacture of the Coffee Mill they produce, introducing an improvement in the face plate and making it more attractive than heretofore.

OWING to their increasing business the Harry Svensgaard Bicycle Company, Fergus Falls, Minn., have added to their force both in office and shop. They advise us that they have commenced handling the Hickory Sulky Wheels and are selling a gratifying number of them.

SIMONDS MFG. COMPANY, Fitchburg, Mass., have during the past year erected a new factory in Chicago, and this factory is now in first-class running order. They state that their increasing business in the West made this step necessary. In Fitchburg they have from time to time made several additions to their works, and while they now have four engines, giving them 350 horse-power, they advise us that they have so much more work than they can take care of with these engines that they are now dividing up their whole business in Fitchburg into different departments and are making arrangements to run their whole shop by electricity, their idea being to have a motor in each department. They are now manufacturing goods in Fitchburg, Chicago, San Francisco and Portland, Ore.

The Iron Age Hardware Price Book F.*

THIS PRICE BOOK, which has just been received from the binders' hands, is larger, handsomer and more complete than the other *Iron Age* Price Books, A, B, C, D and E. The F Price Book is $8\frac{1}{4} \times 11$ inches in size, containing 556 pages of the celebrated Crane's heavy ledger paper, which is tough and strong, permitting frequent changes and erasures. The

A on a short tab on the first of the two leaves, and **A X** on the tab of the second or lower leaf. The **A** on the first leaf is directly over the **A** on the lower leaf, so that the index reads **A X** whether looking at both leaves together or at the lower leaf only. The four rows of index tabs are printed in gold letters on black Russia leather, the tabs securely fastened on both sides of each page, making a handsome and durable index. Fig. 2 shows the index letters full size, and represents the eight first indices from

article has its first two or three letters given, thus permitting immediate reference to it by a single motion. It is, however, obvious if any articles are not directly designated by the index characters, that the index, being alphabetical in its arrangement, indicates the place where quotations on such articles should be recorded. The supplement, however, may be found useful for quotations on any outside goods which the Hardwareman may desire to keep prices on, while at the same time it may be used if necessary for any

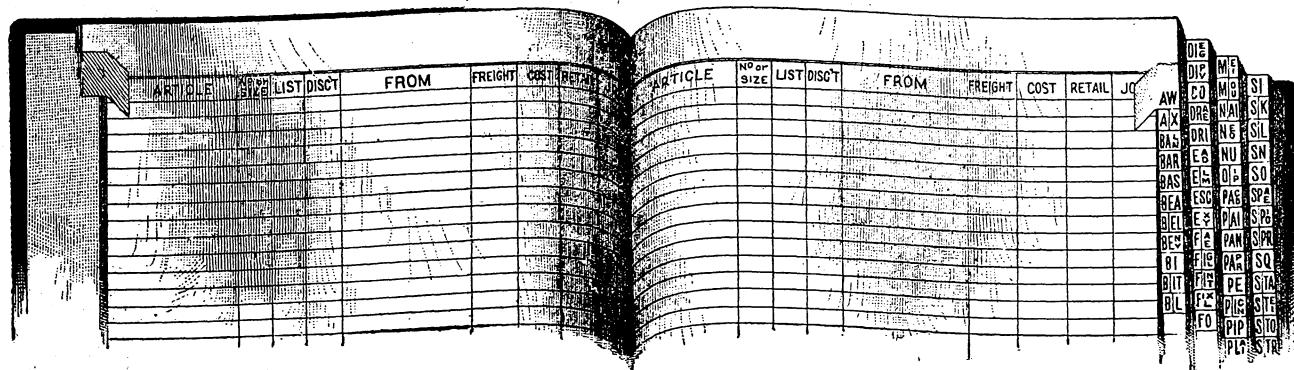


Fig. 1.—The Iron Age Hardware Price Book F.

book is bound in the most substantial manner to withstand hard and constant usage, with covers of flexible seal grained leather. By means of the arrangement shown in Fig. 1, the index applies to every page, each page having an index tab (except 80 pages of supplement in the back of the book), thus permitting reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary

each of the four rows of index. The book is arranged to keep a complete record of goods and prices on a single page, the width giving sufficient room, as shown in Fig. 1. The 80-page supplement at the back of the book is provided to give room for supplemental quotations, memoranda, tables, &c.

A special feature of the book, as also of Price Book E, is the arrangement of the index characters, which, while alphabetical, are arranged with special reference to the classification of Hardware goods, each index character giving the two or three first letters of the names of Hardware articles, as shown in Fig. 2, as for example :

For Augers turn to	A U
“ Parers, Apple “	PAP
“ Saws “	SAW
“ Pumps or Punches turn to	PUM
“ Bits turn to	BIT
“ Chisels or Chucks turn to	CHU
“ Cutlery turn to	CUT
“ Cartridges “	CAR
“ Rules “	RUB
“ Locks “	LO
“ Iron “	IRO
“ Irons “	IR'S
“ Shovels “	SHO
“ Grindstones “	GRI
“ Stones “	STO

Fig. 2.—Fac-simile of Indexing, Price Book F.

in connection with other Price Books. Book F has been prepared with great care, giving a place, it is believed, for every article in the Hardware line, and ample space for recording prices. Sufficient space has also been provided for large lines of goods by allowing four pages to such goods, instead of two pages, as for lines of goods requiring less space. This is accomplished, as in **A X**, for example, by having the letter

* "The Iron Age Hardware Price Book F," with multiple index, arranged by R. R. Williams, Hardware editor of *The Iron Age*. David Williams, publisher and bookseller, 96-102 Reade street, New York. Price, \$7.50.

The ease and convenience with which the book can be used is thus apparent. Special care has been taken to make the classification as indicated in the index correct and comprehensive, making provision for all Hardware articles and giving sufficient space for the keeping and recording of prices. It is thought that every strictly Hardware

overflow of matter from the preceding pages, or to contain list prices or other matter relating to goods.

A 14-page pamphlet, containing a classification of the leading Hardware articles, is furnished with the Price Book, as an aid in suggesting the number of articles and the space required for each line of goods. The pamphlet will prove exceedingly useful, especially when first starting the Price Book. In connection with this Price Book a set of *The Iron Age* Standard Hardware Lists can be used with great advantage.

This Price Book is presented to the attention of Hardwaremen in the confidence that it will be found a most valuable aid in keeping track of the cost and selling prices of goods.

Price-Lists, Circulars, &c.

BEMIS & CALL HARDWARE AND TOOL COMPANY, Springfield, Mass.: Tools. Their illustrated price-list shows Dividers, Calipers, Drive Punches, Check Punches, Saw Sets, Steelyards, Screw and Pipe Wrenches, &c. The manufacturers refer to their facilities and long experience as enabling them to furnish goods of superior quality and finish on the most favorable terms.

D. R. SPERRY & Co., Batavia, Ill.: Improved Vacuum Pans. The Pans are made with a catch-all and man hole, with the dome and steam kettle bolted solidly together; also with a raised dome, catch-all, agitator and swinging kettle. By the latter system, the manufacturers state, the kettle can be swung to place and packed air-tight in five minutes.

J. H. WILLIAMS & Co., Brooklyn, N. Y.: Iron, Steel, Copper, Bronze and Aluminum Drop Forgings; also An-

nealing and Case-Hardening done to order. Their illustrated catalogue shows Engineers' Wrenches, Lathe Dogs, Thumb-Nut Blanks, Thumb-Screw Blanks, Brock's Chain Pipe Wrench, Three-Wheel Pipe Cutter, Stanwood Cutter Wheel Forgings, Shafting Collars, Special Forgings, &c.

THE SUN MFG. COMPANY, Greenfield, Ohio: Sun Cash Registers, Money Drawers, Coffee Mills and Wooden Ware Specialties. Two catalogues are devoted to these goods, the first illustrating Coffee Mills, Rat Traps and Money Drawers. The second catalogue relates entirely to Cash Registers. A number of illustrations in each catalogue are in colors, adding to their artistic appearance. The company advise us that they have recently enlarged their works and are branching out quite extensively in the Coffee Mill and Cash Register line.

PAGE BELTING COMPANY, New York, Boston, Chicago and San Francisco: The company issue a twenty-fifth anniversary souvenir, in which is shown the room where the business was commenced in 1868, and their present plant at Concord, N. H. Among other illustrations is a panorama of the World's Fair, the company's stores, views of the interior of their factory, &c.

THE AMERICAN BIT BRACE & TOOL COMPANY, Buffalo, N. Y.: Bit Braces. Their illustrated catalogue shows the mechanism of their Ratchet Bit Brace, their Ratchet Ring, Jaws and Sockets, and 19 styles of Braces made by the company.

THE PLUME & ATWOOD MFG. COMPANY, 18 Murray street, New York: Circular of Banner, Central Draft, Night and Bedroom Lamps, Table Lamps and Mammoth Hanging Lamps for house or office use, with both Tin and Porcelain Dome Shades; also Sun, Climax and American Duplex Burners.

STANLEY G. FLAGG & Co., Philadelphia, Pa.: Malleable Iron, Gray Iron and Steel Founders, manufacturers of Pipe Fittings for Wrought Iron and Steel Pipe connections. Their illustrated catalogue and price-list shows the goods in great variety. A telegraph code is also given for convenience of customers in telegraphing hurried orders, as a number of sizes or different quantities can be ordered in a ten-word telegram.

STRATTON BROTHERS, Greenfield, Mass. Millers' Falls Company, Millers' Falls, Mass., exclusive agents: Improved Spirit Levels. Their catalogue illustrates these goods in different styles, also Pocket Levels. The manufacturers claim for these goods accuracy, durability and reliability.

DECKER MFG. COMPANY, Keokuk, Iowa: Curry Combs, Hog Rings and Ringers, Wire Stretchers, Barb Wire, &c. Their illustrated catalogue shows the Arc, Square and Globe Spring Curry Combs, the Axtell Flexible, Maud S. and opened and closed back Combs, Decker Universal Hog Rings and Ringer, Challenge Wire Stretcher and Challenge Barb Wire.

WILLIAM PORTER'S SONS, New York: Lamps, Lanterns, &c. An illustrated catalogue devoted to Marine and Railroad Goods, shows Railroad, Ship, Signal, Hand and Coal Oil Lanterns, Street Lamps, adjustable Railroad Lanterns, Globes, Burners, Chimneys, &c.

DERBY SILVER COMPANY, Birmingham, Conn., New York, Chicago and San Francisco: Silver Plated Ware. Their illustrated catalogue and price-list, containing 117 large-size pages, shows an extensive line of silver-plated Hollow Ware, Casters, Butter Dishes, Hotel Goods, Toilet Articles, Folding Mirrors, &c.

THE BALDWIN REFRIGERATOR COMPANY, Burlington, Vt.: Dry Air Refrigerators. Their illustrated catalogue shows Zinc-lined and Spruce-lined Refrigerators, Ice Boxes, in hard and soft wood; hardwood, Zinc lined sideboard Refrigerators, showcase Refrigerators, Refrigerators for butchers, markets, hotels, hospitals, &c.

BUILDERS' IRON FOUNDRY, Providence, R. I.: Globe Special Castings for Water Works. Their illustrated catalogue is devoted to Crosses, Branches, Reducers, Elbows, Sleeves, Curved Pipe, Short Elbows, with Double Bells, Plugs, Caps, odd-shaped or Combination Castings, the Venturi Meter, &c.

It Is Reported—

That Frank A. Smith has purchased John Sturken's interest in the firm of Mehaffie & Co., dealers in Stoves and Tinware, Logansport, Ind., and the firm name will hereafter be Mehaffie & Smith.

That the Hardware store of Ruhlmiller, Cardington, Ohio, was burglarized on the 7th inst., for the second time within a month.

That H. F. Ziegler, Hardware merchant, of South Scranton, Pa., was married on the 8th inst. to Miss Barbara Ehrhardt, daughter of Mrs. Mary Ehrhardt.

That the Hardware firm of Uecke & Roeder, Milwaukee, Wis., have been dissolved, Julius Roeder retiring. The business will hereafter be carried on under the firm name of Frederick Uecke & Son.

That on the 9th inst. the Hardware and Crockery store of Wagner & Chabot, San Antonio, Texas, was destroyed by fire. Loss, \$90,000; insurance, \$45,000.

That the R. B. Webb Hardware Company, Crystal Falls, Mich., have been succeeded by J. C. Webb.

That A. C. Earsley, dealer in Hardware, Stoves and Agricultural Implements, Harman, Minn., has disposed of his business.

That J. E. Cueny & Co.'s Hardware store, Cheboygan, Mich., was gutted by fire and water on the 7th inst. The loss was about \$2000, covered by insurance.

That the Hardware store of Cockran & Marshall, Ashland, Wis., was robbed on the 3d inst.

That Robert W. Smith, in the Hardware business at Cohoes, N. Y., was married on the 14th inst. to Miss Isabel A. Towle.

That J. F. Colby & Co. are a new Hardware firm at Santa Rosa, Cal.

That the Hardware store of William Thompson, Irwin, Pa., was robbed for the fifth time on the 1st inst. The thieves got away with \$100 worth of Revolvers, Cutlery, &c.

That burglars entered the Hardware store of T. Hawley & Co., Bridgeport, Conn., on the 13th inst. and secured a number of Razors and Knives.

That Henry H. Guernsey of the firm of Hall & Guernsey, Stove dealers, New Haven, Conn., has purchased the entire interest of the establishment.

Prize Competitions

\$25.00.

As announced in previous issues the following competitions are now before our readers and remain open until the dates named:

Prize Competition No. 25.

SUBJECT:

Show-Window Display.

The subject of attractive show-window display is one requiring careful attention as an inexpensive and sure method of attracting and securing trade. This competition is designed to draw out suggestions as to the best methods of displaying goods, which may, if desirable, be illustrated by sketches and photographs. Prominent among the points which may be touched upon are the following:

1. The object of window display;
2. How this object may best be accomplished;
3. Kinds of goods especially suitable for window display;
4. The frequency with which displays should be changed;
5. Treatment of season goods;
6. To what extent goods in operation may be shown;
7. Suggestions for special and unique designs;
8. Arrangement of stands, shelving, &c., in windows;
9. Errors to be avoided in window display.

This competition will remain open until June 24, 1893.

Prize Competition No. 26.

SUBJECT:

To What Extent Are Manufacturers and Jobbers Justified in Selling to Consumers.

This competition is suggested by the fact that frequent complaints are made that manufacturers and jobbers interfere with the retailer's business by selling to his customers. It is intended to draw out the views of the trade on the subject. In discussing the question the following points may, perhaps, naturally be touched upon:

The annoyance and injury to which the retailer is thus subjected; What the rights and privileges of the manufacturers and jobbers are in this matter;

What it is feasible for retailers to do for their own protection.

This competition will remain open until July 1, 1893.

Prize Competition No. 27.

SUBJECT:

Local Associations of Merchants.

It has been found feasible to form associations in many places for the purpose of securing more friendly relations among competitors and reaching an understanding in regard to matters of common interest. Among the good results referred to as coming from such associations are the following: Overcoming petty jealousies; cultivating a spirit of fraternity; listing of undesirable customers; an understanding in regard to time of pre-

senting bills; putting in operation early-closing movements; agreement as to the prices at which goods are to be sold; mutual accommodation in supplying goods which one merchant may be temporarily short of, &c. The subject is thus evidently a broad one and of a good deal of practical interest. In discussing it the following points are suggested:

Whether it is desirable to have such associations;

How such associations may be organized;

The objects to be accomplished by them.

It will also be of interest to have any information in regard to the practical working of such associations.

This competition will remain open until July 8, 1893.

The following prizes will be awarded in each competition:

First prize.....	\$12.50
Second prize.....	7.50
Third prize.....	5.00

The prizes will be awarded for answers which, in the judgment of the Committee of Award, are most suitable for publication and of the most general interest.

We reserve the privilege of extending the time on any competition in case the contributions received are not of sufficient number or merit for the committee to award prizes. These competitions are open to every one, and it is hoped that there will be a general response from business men. We shall have the privilege of publishing any or all of the contributions received.

Replies are to be received not later than the dates on which the competitions close. They should be addressed as follows:

DAVID WILLIAMS,

96-102 Reade street,
New York.

Prize Competition No. —.

The committee to whom the contributions in Prize Competition No. 15 were referred have awarded the prizes as follows:

First Prize to T. W. STAKE, New York, N. Y.

Second Prize to R. T. PALMER, Buffalo, N. Y.

Third Prize to E. C. GOULD, Manchester, N. H.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

There has been a remarkably good distribution of the leading lines of Paints and Colors during the past week, despite the general disposition of jobbers to follow an extremely conservative policy and more or less restraint upon building operations caused by the condition of the money market. Specialties have also fared remarkably well, considering the advanced stage of summer season, quietude in various industries, such as car, vehicle and boat building. It is also remarkable that outside of Lead and Quicksilver, base materials have undergone hardly any change, and that the markets are bare of indications of any radical change in the immediate future. As a matter of fact, it would seem that the relation of supply and demand distances other conditions at the present time and that competition is temperate nearly all along the line.

White Lead.—The list prices that have been quoted for some time past by the National Lead Company and outside corroders who follow the path mapped out by the combine are adhered to. Here and there some liberal allowance for cartage and other incidental expenses may be made, but such concessions are strictly the exception and chiefly in territory where outside corroders are most aggressive. Jobbers, however, suit prices for small quantities to circumstances and take orders for a few kegs at prices very close to the official list rates for lots of 500 lb to 5 tons. Quick process and Mixed Leads are without radical change in price, although more or less irregular, and manufacturers report a good reasonable business. The impression prevails that, because of the low level to which prices for Pig Lead have been forced, corroders will reduce their prices on or about July 1, since a good profit is assured at $\frac{1}{4}\%$ reduction, but up to the present time that idea seems to have no better support than mere surmise and a belief that at present margin between selling prices for White Lead and cost of crude material, there may be a heavier output of the former by independent corroders.

Red Lead and Litharge.—There is no change in the character of the demand for either domestic or foreign Red Lead, and the business passing is chiefly at the old line of prices. Some weakness is, however, shown in the instance of foreign product, sales of which are said to have been made at less than 7¢ for well-known brands. Litharge is very quiet, there being few orders from glass makers and merely routine demand from other consumers. Prices not positively lower, but rather weak on the low-grade article.

Orange Mineral.—French product is more firmly held at $10\frac{1}{2}\%$ upward, owing to moderate supply on the spot, but German can be secured at $7\frac{1}{2}\%$ on the spot and as low as $7\frac{1}{4}\%$ for future shipment. Domestic product is selling at about former prices but rather slowly.

Zincs.—Outside of deliveries on old orders there has been little movement in domestic Oxide, and the demand at present is slow. Prices have undergone no change, however, and there is no sign of burdensome accumulation in manufacturers' hands. Foreign product is quoted as heretofore, and sells to about the usual extent for this season of the year.

Colors, &c.—A sharp advance in the price of Quicksilver imparts stronger tone to the market for Quicksilver Vermilion, but as yet no change has taken place in prices for either domestic or foreign brands. There is some irregularity in prices of Carmine, although the old list was reaffirmed at a recent meeting of manufacturers. In other Dry Colors there is nothing to note aside from routine trade, chiefly at the former range of prices. Oil Colors are also about stationary in price and meeting with merely fair sale. Ready Mixed Paints are selling very fairly, but chiefly in moderate quantities.

Miscellaneous.—Block Chalk has undergone no change. Demand is very ordinary. Supplies on the spot are moderate and offerings of future shipments are not heavy. Whiting has undergone no radical change, but the destruction of a Philadelphia works by fire reduces the output sufficiently to give the market better tone. There has been no change in the condition of the market for Barytes, Terra Alba, Talc or China Clay.

Oils and Turpentine.

All branches of the market for Animal and Vegetable Oils have been spiritless, and there are no distinctly

new features to note for the week under review. Speculators in the lines of Oils that go chiefly into the soap makers' boilers dropped several blocks of low-grade Cotton-Seed and Cocoanut Oils at comparatively low prices, but otherwise nothing more than commonplace trading has taken place, and the general situation is much the same as it was at the date of last week's report, with trade and consumptive demand tame in all that the term implies. Fluctuations in values have been very narrow, however, and there is nothing in the general surroundings suggestive of other than ordinary changes in the near future.

Linseed Oil.—Statistics showing that the amount of domestic seed in sight is far behind the quantity visible a year ago have been brought prominently to the surface, and in connection with this is another significant circumstance in the shape of the curtailment of grinding that usually happens at about this season of the year. Along with very good movement of Oil into the channels of consumption, these conditions serve to keep the market very steady, since weak holders who "cut" prices are gradually liquidating, while the stronger concerns move off enough Oil to keep themselves in comfortable position. At this writing there is a bare chance that some Western stock may be secured at 48¢, but New York City crushers stand out for 50¢, and seem to secure a good percentage of local and near-by custom. The large and harmonious producers, to all accounts, are masters of the situation for the time being.

Cotton-Seed Oils.—There has been some liquidation by speculators and other holders who had more Oil coming on contract than they could conveniently take care of, under which prices have been more or less depressed, but the redeeming feature remains that weakness has been confined almost wholly to speculative circles and that values have depreciated to a slight degree only. In other words the actual changes have been moderate in the face of apparent weakness in the tone of the market. Most of the business effected has been at prices on the basis of 40¢ for prime quality crude Oil, 44¢ @ 48¢ for prime Summer Yellow, 49¢ @ 51¢ for Butter quality and 50¢ @ 51¢ for prime White.

Lard Oil.—The popular quotation for strictly prime city made Oil is 75¢, but business has been effected at 1¢ or 2¢ less, and the indications are that cash buyers may yet secure special terms. Business has been strictly routine, with the volume only fair, and demand just now is extremely tame, pending developments in the market for raw material.

Menhaden Oil.—At a meeting of the association, it was decided to place the new Oil on the same basis of prices that ruled last year. Reports from the fishing do not indicate great results thus far. From a reliable source we are informed that there is a possibility of Maine fishing this season, as schools of fish have been sighted along the coast. The Oil of last season's catch is practically exhausted. Pressed and Bleached Oils are selling at former prices, but in moderate quantities only.

Miscellaneous.—There is no change whatever in the market for crude Sperm or Whale Oils, and the market for refined products is steady but quiet. Ceylon Cocoanut Oil has been sold at as low as 5¢ @ $5\frac{1}{2}\%$, but a lower price than $5\frac{1}{2}\%$ is now strictly exceptional. Common Olive Oil is weak, with as low as 55¢ @ 57¢ quoted for Italian in barrels.

Spirits Turpentine.—Moderate receipts, fair average demand and reduction in stocks here have combined to stiffen prices to $29\frac{1}{2}\%$ for regular and 30¢ for machine barrels.

The Gleason Bench Vise.

The E. D. Gleason Machine Company, Second and Diamond streets, Philadelphia, Pa., are putting the vise on the market shown in the accompanying cuts. The vise, as shown in Fig. 1, is composed of three pieces—the front or jaw with lever, the extension bar and the stationary piece, which is bolted to the bench or table. The jaw is 7 inches wide and 6 inches deep. Fig. 2 illustrates the extension bar and the locking arrangement or stop which prevents any movement of the material

manufacturers claim that these spindles give perfect adjustment with strength and rigidity. They are made in solid and swivel spindle.

Gravity Extension Fixture for Lamps.

The Plume & Atwood Mfg. Company, 18 Murray street, New York, are offering a gravity extension fixture, as here

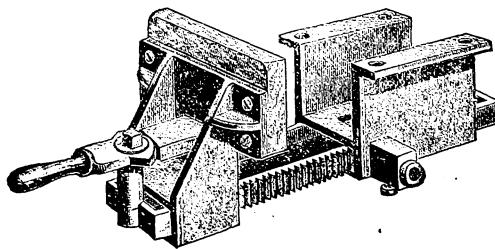


Fig. 1.—The Gleason Bench Vise.

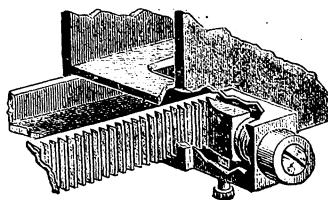


Fig. 2.—Extension Bar and Locking Arrangement.

diameter formed in a die. Above this disk is a cast-iron drum, grooved so that the chains after passing over wheels are taken up by the drum, which is actuated by a spring. The locking contrivance consists of a cast-iron ball $\frac{1}{2}$ inch diameter rolling back and forth in a wedge-shaped channel. To elevate the lamp it is swung slightly to one side to release the ball, when the lamp is gently lifted and the chains wound up. When the lamp is to be low-

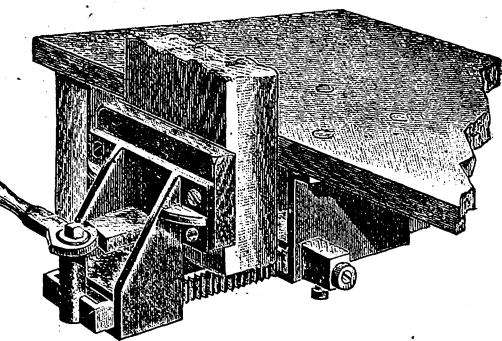


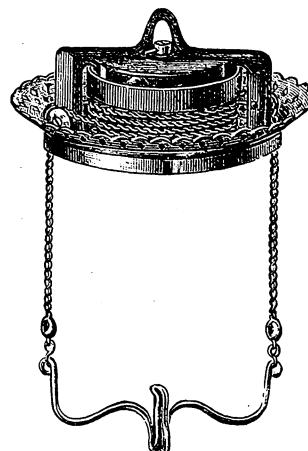
Fig. 3.—Vise in Use.

or article in the vise. In Fig. 3 the vise is shown attached to the bench, with a piece of material clamped between the jaw and table. In operation the work to be held is placed in position and the front piece pushed in until it can go no further. The handle is then given a slight turn, which holds the work fast and rigid. To release the work the handle is slightly pulled toward the operator. It is claimed that the vise will instantly take work of any thickness from zero to 10 inches, holding it parallel; that no adjustment of any kind is necessary; that the operation is instantaneous, occupying only one-quarter the time necessary with an ordinary vise, and that the construction of the vise obviates the necessity of holding the work during the process of clamping. The manufacturers state that the vise is heavy, well made and fully guaranteed suitable for heavy work. It is finished in japan and designed for the general use of carpenters, pattern makers, cabinet makers and other wood workers.

Triple Spindle Knob.

The Yale-Towne Mfg. Company, 84-86 Chambers street, New York, and Stamford, Conn., have recently added to their line of goods knobs with triple spindles, as herewith shown. The spindle is made of three parts of steel, the middle piece acting as a wedge

illustrated, having a ball stop. This device is intended to be attached to a hook in the ceiling for suspending hall

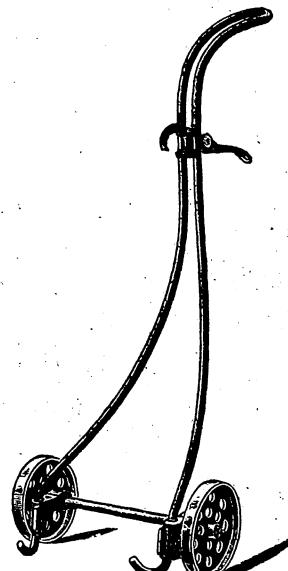


Gravity Extension Lamp Fixture with Ball Stop.

or other lamps, and permits of the lamp being quickly and readily taken out for cleaning or refilling without the

Little Giant Steel Truck.

The Little Giant Truck Company, Syracuse, N. Y., are introducing the truck illustrated herewith. It is described as being made entirely of metal, with well-fitted bearings, with no wood



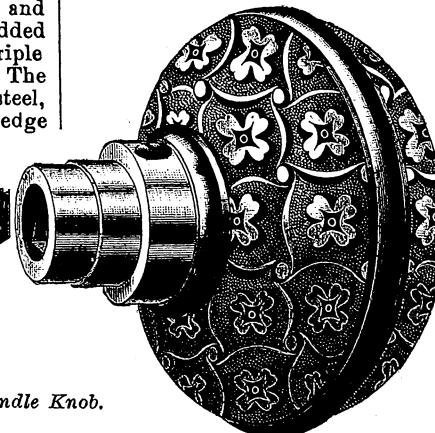
Little Giant Steel Truck.

when the set screw is tightened, causing the whole to be clamped in the knob as in a vise. This allows the adjustment to be made to a nicety for doors of any thickness, doing away entirely with the necessity of washers. The

fixture springing back when the weight is removed. It can be drawn to any point and held and as easily released. The fixture in position is ornamental in appearance, the mechanism being concealed by a metal disk $7\frac{1}{2}$ inches in



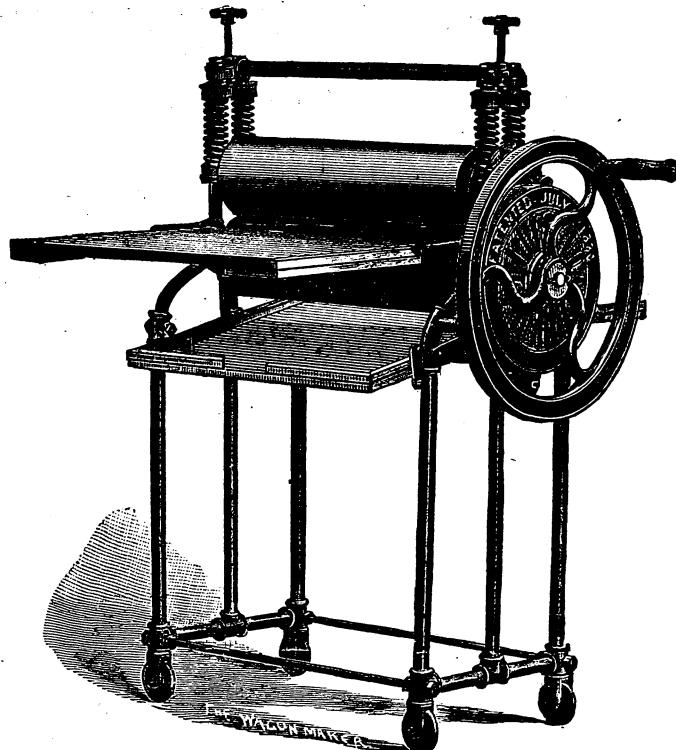
Triple-Spindle Knob.



in its make-up to shrink, warp or decay. The truck combines strength with lightness, the manufacturers stating that it weighs but 14 pounds and will carry 500 pounds. The adjustable clamp, operated by an eccentric lever, is referred to as a sure and positive grip on a barrel, and its range of adjustment as permitting various sizes of barrels to be handled on the same truck, while its compactness and practical indestructibility are features emphasized by the makers. The truck is recommended

for light general use, such as moving flour, sugar, ash and garbage barrels, &c., and is known as No. 1. A No. 2 truck is soon to be ready for the market

The hanger, which is provided with notches, passes through an opening in the shelf by which the shelf can be adjusted to various heights. In opera-

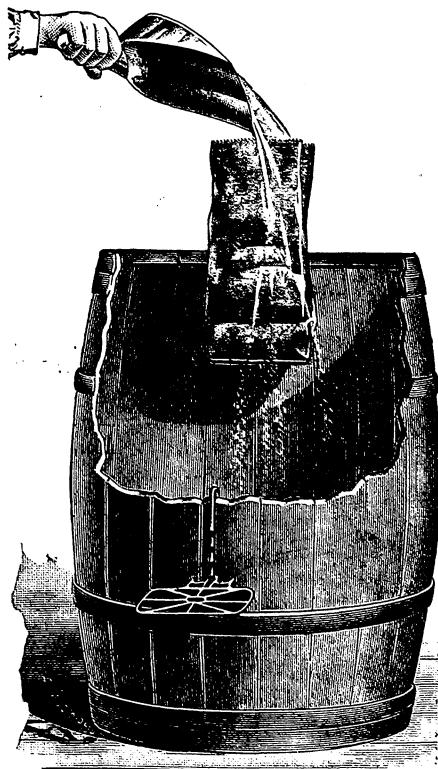


The Eclipse Mangle.

adapted for heavy work, such as oil, liquor barrels, boxes, &c. The trucks are finished in japan and vermillion.

Edgerton's Hanging Shelf.

The accompanying cut shows a hanging shelf put on the market by C. W.



Edgerton's Hanging Shelf.

Edgerton, Bristol, Conn. The shelf is about 7 inches square and the hanger 9 inches long, nicely japanned, and shown suspended on the barrel.

tion the hanger is placed over the edge and inside the barrel containing flour, sugar, &c., and on the shelf the paper bag to be filled is placed, as shown at the top of the cut. As the article in the barrel is lowered the shelf is let down on the hanger to a convenient height for holding the bag. The manufacturer claims that the device saves time, that the bag is in the most convenient position possible, and that everything spilled goes into the barrel instead of on the floor or counter.

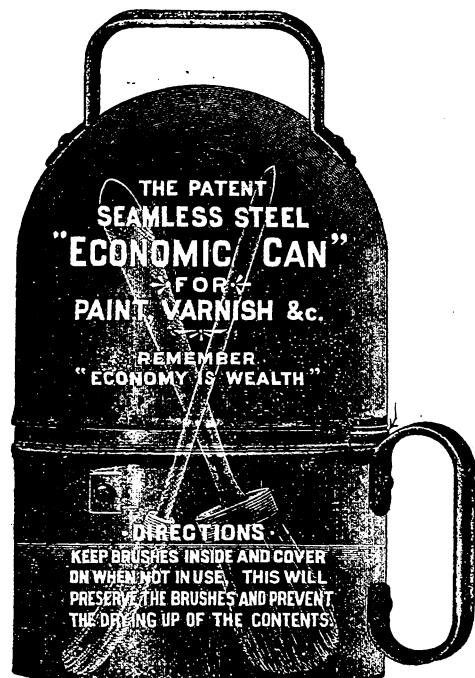
The Eclipse Mangle.

The accompanying cut represents a mangle put on the market by the Lang Mfg. Company, Racine, Wis. The machine is described as having a cast-iron frame tied by wrought-iron bars, with the parts geared to secure a pressure of 2000 pounds, having the gearing so adjusted as to make the operation of the machine easy. The rolls are of selected white maple, treated by a process to prevent shrinkage or checking. The manufacturers claim that by the use of the machine a fine gloss is obtained; that there is no possible chance of scorching the goods, and that a mangle will do the work of six expert workmen, with a child to turn it while a woman runs through the plain goods. The mangles are made in two sizes, 24 and 27 inch rollers.

Economic Can.

The Wilmot & Hobbs Mfg. Company, Bridgeport, Conn., and 20 Murray street, New York, are introducing the Economic can, as here shown. The can is 9 inches high and 6 inches in diameter. Both top and bottom are seamless, being formed from Swedish steel, with no seams to leak. Where the two sections are joined is a rubber cushion, making, it is stated, a tight joint and

hermetically sealing the can. Two wide flat steel springs fastened by rivets, holding the handle to the dome, and projecting an inch or more below the rubber, keep the two parts together, which, the makers say, will sustain 10 pounds weight. There is a piece of metal riveted to the inside of the can, on which the brush may be wiped to relieve it of surplus material. There is also a formation of wire with two hooks that can be slipped on the metal piece alluded to to hang the brush on. The can is black japanned, and very attractive in appearance. The bottom section will hold conveniently 1 quart. The can is designed for the use of painters, pattern and cabinet makers,

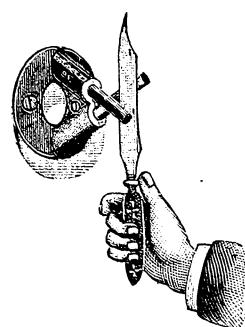


Seamless Varnish or Shellac Can.

and all who use fine material, especially shellac and varnish. The hermetical sealing of the can when closed is intended to preserve brushes and varnish by preventing evaporation, thus avoiding the necessity of cleaning the brushes and the formation of skins.

Foster's Knife Sharpener.

John Chatillon & Sons, 85-89 Cliff street, New York, are offering the sharpener as here shown for sharpen-



Duplex Steel for Sharpening Knives.

ing carving or other knives. It consists of two straight pieces of steel 8 by 3 inches in size, roughened in the same manner as butchers' steels. The pieces of steel are held rigidly at a

proper angle by means of two cast-iron sections, drawn together by a screw and nut in the center. It is intended the sharpener should be screwed permanently to the wall or other convenient place. The knife is sharpened by drawing it firmly between the steels a few times. The entire surface of the steels may be used by turning and reversing them as found necessary.

The Wayne Barrel Truck.

Wayne Oil Tank Company, Fort Wayne, Ind., are introducing the truck illustrated in the accompanying cuts. The truck is designed to obviate the

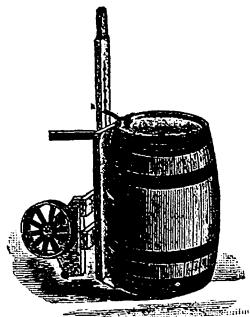


Fig. 1.—Truck Ready for Use.

necessity of platforms on which to place barrels while on tap; the barrel being loaded can be pushed to any portion of the store or under a counter, and there remain on tap until the barrel is empty.

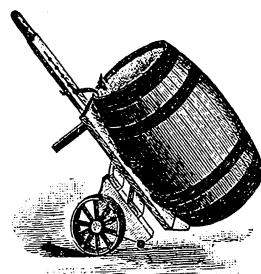


Fig. 2.—Barrel Loaded.

The handle is removed when the barrel is placed in the desired location, as in Fig. 3; where several trucks are in use only one handle is necessary. The manufacturers also make a drip pan to



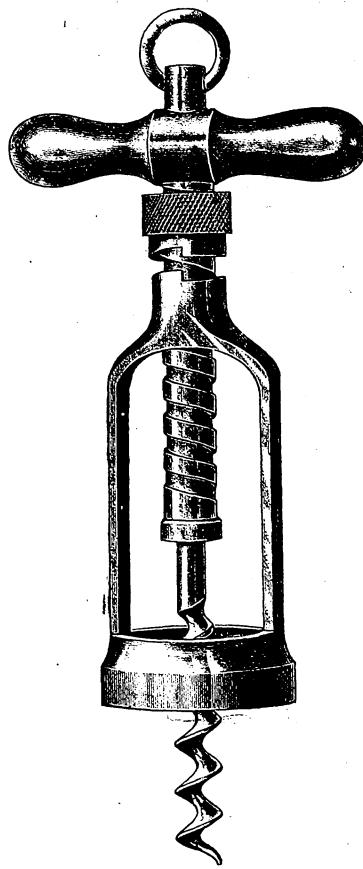
Fig. 3.—Barrel while on Tap.

place under the faucet, to catch the overflow or drippings, keeping the surroundings neat and clean.

The Empire Automatic Cork Puller, No. 3.

The accompanying cut represents a cork puller recently put on the market by the Empire Knife Company, West Winsted, Conn. The operation when pulling a cork is described as follows:

The sliding nut sets the gauge for the distance the cork screw will pierce the cork, and the cork screw, released with the first turn in the cork, lifts the cork without turning in the same, saving thereby so much power that the hardest and longest cork can be lifted easily



The Empire Automatic Cork Puller, No. 3.

by turning with two fingers. The cork puller is made of forged steel and is designed for family use.

NEW PUBLICATIONS.

THE SLIDE RULE. By William Cox. 44 pages, size $5\frac{1}{2} \times 8\frac{1}{2}$ inches, bound in cloth, published by Keuffel & Esser Company. Price 75 cents.

This is the third edition of a well-known work, to which the author has added a full description of the "Duplex" slide rule, an improved form of the Mannheim, which he has invented and patented. Besides clear instructions as to the method of using this valuable instrument, the book contains extensive tables of equivalents for rapid and easy conversion of geometric and other quantities, graphic demonstrations of the working out with the slide rule of some 80 different formulas and practical examples occurring constantly in mechanics, engineering, and even business. The "Duplex" slide rule, unlike all others, has scales on both sides, their arrangement being such that the working out of many complex calculations is very much simplified, while the solutions obtained of certain everyday problems are in a much more convenient form. The work considered as a whole is one likely to prove interesting and instructive, and should be found in the library of trade literature of every wide-awake and progressive mechanic.

CONTENTS.

	PAGE.
Manganese Steel Wheels.....	1871
The Vulcan Steam Drop Press. Illus.....	1871
The Bertrand Process for Rust Proofing, Tinning and Enameling Iron.....	1872
World's Fair Notes.....	1873
Artistic Wrought Iron.—III. Illus.....	1876
The Boiler Manufacturers.....	1879
The Philadelphia Corliss Blowing Engine Illustrated.....	1880
The Trajectory of a Modern Gun. Illus. 1882	1882
Punched Castings. Illustrated.....	1882
The Tin-Plate Report.....	1882
Angle Iron Shear Mounted on Turn Table. Illustrated.....	1883
The Week.....	1883
Editorials:	
Money and Exchange.....	1885
The Engineering Congress.....	1885
Four Days Across the Atlantic.....	1886
Southern Pig-Iron Freights.....	1886
Important Coke Decision.....	1887
Obituary.....	1887
Personal.....	1887
Mesaba Mines.....	1887
The Amalgamated Association.....	1888
Manufacturing:	
Iron and Steel.....	1888
Machinery.....	1889
Miscellaneous.....	1889
Trade Report:	
Chicago.....	1890
Philadelphia.....	1891
Louisville.....	1891
St. Louis.....	1892
Cincinnati.....	1892
Baltimore.....	1892
Boston.....	1893
Pittsburgh.....	1893
Cleveland.....	1894, 1896
Metal Market.....	1895
New York.....	1895
Financial.....	1896
British Iron and Metal Markets.....	1896
The Pennsylvania Steel Company.....	1896
Hardware:	
Condition of Trade.....	1897
Notes on Prices.....	1897
Massachusetts Hardware Dealers' Association.....	1898
Boston Wholesale Hardware Association.....	1899
Correspondence.....	1899
Export Notes.....	1400
World's Fair Exhibits.....	1400
Trade Topics.....	1401
Trade Items.....	1401
Australian Letter.....	1402
Travelers' Day.....	1402
Manufacturing.....	1402
The Iron Age Hardware Price Book F. Illustrated.....	1403
Price-Lists, Circulars, &c.....	1403
It Is Reported—.....	1404
Prize Competitions.....	1404
Paints and Colors.....	1405
The Gleason Bench Vise. Illustrated.....	1406
Triple-Spindle Knob. Illustrated.....	1406
Gravity Extension Fixture for Lamps. Illustrated.....	1406
Little Giant Steel Truck. Illus.....	1406
Edgerton's Hanging Shelf. Illus.....	1407
The Eclipse Mangle. Illustrated.....	1407
Economic Can. Illustrated.....	1407
Foster's Knife Sharpener. Illustrated.....	1407
The Wayne Barrel Truck. Illustrated.....	1408
The Empire Automatic Cork Puller, No. 3. Illustrated.....	1408
New Publications.....	1408
Current Hardware Prices.....	1409
Current Metal Prices.....	1416

Chalk Lines —See <i>Lines</i> .	
Checks, Door —	50%
Unity	
Chisels —	
 Socket Framing and Firmer	
E. S. & W.	
New Haven	
Witherby	75&10@75&10&10%
Ohio Tool Co.	
Mix.	75@75&5%
Douglas.	75@75&5%
Buck Bros.	30%
Merrill.	60&10@60&10&5%
L. & J. White	30@30&5%
 Tanged and Miscellaneous	
Tanged Firmers.	50@50&10%
Butchers'	\$4.75@5\$0.00
Spear & Jackson's.	\$5 to 2
Buck Bros.	30%
Cold Chisels, # D.	15@16%
 Chucks —	
Beach Pat. each, \$8.00.	20%
Morse's Adjustable, each, \$7.00, 20@20@5%	
Danbury. each, \$6.00, 30@30@5%	
Syracuse, Balz Pat.	25%
Graham Patent.	33@4%
Skinner's Patent Chucks.	
Combination Lathe Chucks.	33@4%
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Independent Lathe Chucks.	40%
Drill Chucks.	15%
Union Mfg. Co.	
Victor.	\$8.50, 25%
Combination.	40%
Universal.	40%
Independent.	40%
 Churns —	
Tinna Union, each, 5 gal. \$3.25; 7 gal.	
\$8.75; 10 gal. \$4.25.	
McDermott Star Barrel Churn, each 6 gal. \$2.60; 10 gal. \$2.75; 15 gal.	
\$3.00; 20 gal. \$3.25.	
 Clamps —	
R. I. Tool Co. Wrought Iron.	25%
Adjustable, Cincinnati.	15@10%
Adjustable, Hammers.	15@15&5%
Adjustable, Stearn's.	30@30@10%
Stearn's Adjustable Cabinet and other net.	30@30@10%
Gatlin, Sargent's.	70@10%
Carriage Makers', Sargent's.	75@75&5%
Carriage Makers, F. S. & W Co.	40@40@10%
Ehman & Mfg. Co.	10@15@10@10%
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Saw Clamps, see Vise, Saw Fitter.	
Carpenter's, Cincinnati.	25@10%
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Bradley s.	25@30%
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Beatty's.	40@40&5%
New Haven Edge Tool Co.'s.	40%
P. S. & W.	33@4@33@4@10%
Foster Bros.	30%
Schulte, Lohoff & Co.	40@40@5%
 Clips —	
Norway Axle, M & 5-16.	55@5@5%
2d grade Norway Axle, M & 5-16.	65@5%
Superior Axle Clips.	68@4@5@70%
Norway Spring Bar Clips, 5-16.	60@5@5%
Wrought Iron Felloe Clips.	3 D. 5@5%
Steel Felloe Clips.	3 D. 5@5%
Baker Axle Clips.	25%
 Cloth and Netting, Wire —	
See <i>Wire, &c.</i>	
 Cockeyes —	50%
 Cocks, Brass —	
Hardware list.	60@2%
 Coffee Mills —See <i>Mills, Coffee</i> .	
 Collars, Dog —	
Chapman Mfg. Company, new list.	40%
Medford Fancy Goods Co.	40@10@50%
Embossed, Gilt, Pope & Steven's list.	30@10%
Leather, Pope & Steven's list.	40%
Brass, Pope & Steven's list.	40%
 Combs, Curry —	
Fitch's.	50@10@50@10@10%
Rubber, per doz.	25%
American Curry Comb Co.	33@4@40%
Kohler's Magic Oscillating.	20@25
Kohler's Humane.	20@10%
 Compasses, Dividers, &c. —	
Compasses, Calipers, Dividers.	70@70@10%
Bemis & Call Co.'s	
Dividers.	65%
Compasses.	50@5@5%
Calipers, Inside or Outside.	65%
Calipers, Wing.	60%
Calipers, Double.	65%
Calipers, Call's Patent Inside.	55%
Excelsior.	50%
J. Stevens & Co.'s.	25@10%
Starrett's	
Spring Calipers and Dividers.	25@10%
Lock Calipers and Dividers.	25%
Combination Dividers.	25%
 Coolers, Water —	
S. & Co.: 2 gal., \$2.00; 3 gal., \$2.50; 4 gal., \$2.75; 6 gal., \$3.40 each.	33@4%
 Coopers' Tools —	
See <i>Tools, Coopers'</i> .	
 Cord —	
Sash—	
Common.	# D. 9@10@
Patent, good quality.	# D. 11@12@
White Cotton Braided, fair.	24@25@
Common Russia Sash.	# D. 12@13@
Patent Russia Sash.	D. 13@14@
Cable Laid Italian Sash.	# D. 19@20@
India Lake Laid Sash.	11@12@12@
Silver Lake.	
A quality, White, 50¢.	25%
A quality, Drab, 50¢.	25%
B quality, White, 50¢.	10%
B quality, Drab, 50¢.	10%
Sylvan Spring, Extra Braided, White.	35%
Sylvan Spring, Extra Braided, Drab.	35%
Egyptian Imit. Braided, White.	27@28@
Egyptian, India Hemp, Braided.	26@27@
Massachusetts, White.	28@
Samson.	
Braided, White Cotton.	# D. 37@
Braided, Drab Cotton.	# D. 42@
Braided, Italian Hemp.	# D. 40@
Braided, Linen.	# D. 56@
Tate's Solid Braided—	
Hercules, White.	# D. 25@
Hercules, Drab.	# D. 30@
Economy Drab.	# D. 27@
Economy White.	# D. 22@
Assawan Mills—	
Braided, Giant, White.	# D. 30@
Braided, Giant, Drab and Fancy, # D. 55@	10@
 Drills and Drill Stocks —	
Blacksmith's Self-Feeding.	each \$1.75
Blacksmith's Self-Feeding, each \$7.00, 20% off.	
Bream, F. S. & W.	40@40@
Bream, Wilson's.	30@5@
Bream, Millers Falls.	each \$3.00, 25%
Bream, Bartholomew's.	25@10@40@
Ratchet, Merrill's.	20@20@5@
Ratchet, Ingersoll's.	25%
Ratchet, Parker's.	20@20@5@
Ratchet, Whitney's.	20@10@
Ratchet, Weston's.	20@25@
Ratchet, Moore's Triple Action.	25@30@
Ratchet, Curtis & Curtis.	30%
Whitneys Hand Drill, Plain.	\$1.00;
Adjustable.	20@10@
Automatic Boring Tools.	\$1.75@S1.85
Chicago Automatic Drill.	20@10@
Goodell Automatic Drills.	40@45@
 Twist Drills —	
Cleveland.	50@10@10@
Diamond, W. & B.	50@10@10@
Graham's Pat. Groove Shank.	50@10@10@
Morse.	50@10@10@
New Process.	50@10@10@
Standard.	50@10@10@
Syracuse (Metal list).	50@10@10@
 Drill Bits or Bit Stock —	
Drills—See <i>Augers and Bits</i> .	
 Drill Chucks —See <i>Chucks</i> .	
 Dripping Pans —	
See <i>Pans, Dripping</i> .	
 Drivers, Screw —	
Douglass Mfg. Co.	20@20@10@
Disslon's.	50%
Buchi Bros.	30%
Stanley R. & L. Co.'s	
No. 64, Varnished Handles.	65@10@
No. 86.	70@10@
Sargent & Co.'s	
No. 1, Forged Blade.	60@10@10@
Nos. 20, 40 and 60.	65@10@10@
P. S. & W.	70%
Knapy & Cowles	
No. 1.	60@20@70@
No. 2.	60@10@10@70@
No. 3.	60@5@60@10@
Nos. 4 and 60, Acme and Ideal.	50@5@
Kohl's Common Sense.	50@10@5@
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Chapman.	25@10@
Clark's Pat.	30@33@5@
Elliott's Sicket and Ratchet.	25@25@10@
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Kohl's Common Sense.	50@10@5@
Sawyer's.	50@10@5@
Porter's Pat. Window and Door Frame.	33@10@5@
Warner's Screen Corner Irons.	33@10@5@
Stearns' Frames and Corners.	25@25@10@
Cortland.	40@40@5@
Phillips Window Screen Frames.	50@5@5@
Bonanza Window Screens.	50@5@5@10@
Empire Fancy Screen Doors.	50@5@5@10@
 Fixtures, Grindstone —	
Sargent's Patent.	70@10@
Reading Hardware Co.	50@10@
P. S. & W. Co.	50@10@
Moore's.	55@
 Fluting Machines —	
See <i>Machines, Fluting</i> .	
 Fluting Scissors —	
See <i>Scissors, Fluting</i> .	
 Fodder Squeezers —	
See <i>Squeezers, Fodder</i> .	
 Forks —	
Hay, Manure, &c. Asso. List.	70@70@5@
Hay, Manure, &c. Phila. List.	60@60@10@5@
Plated, see Spoons.	
 Frames —	
 Saw —	
White Vermont.	# gro. \$9.00@S10.00
Red, Polished and Varnished.	# doz. \$1.50, 25@
 Screen, Window and Door —	
Porter's Pat. Window and Door Frame.	33@10@5@
Warner's Screen Corner Irons.	33@10@5@
Stearns' Frames and Corners.	25@25@10@
Cortland.	40@40@5@
Phillips Window Screen Frames.	50@5@5@
 Freezers Ice Cream —	
White Mountain.	60@60@5@
Granite State.	65@65@5@
Arctic.	70@70@5@
American.	60@60@5@
Buffalo Champion.	65@65@5@
Shepard's Lightning.	65@65@5@
Gem.	65@65@5@
Blizzard.	70@70@5@
Double Action Crown.	60@60@5@
Crown.	60@60@5@
Star.	60@60@5@
Peerless.	60@60@5@
Giant.	60@60@5@
Zero.	70@70@5@
Boss and Pet.	60@10@20@10@5@
Boyce, F. D. & Co.	each, \$1.50, 20@
Standard.	60@60@20@5@
Electric Bell Sets	
See <i>Bells, Electric</i> .	
 Emery —	No. 4 to No. 54 to Flour, CF.
46 gr.	150 gr. F.F.F.
Kegs, # D.	45@ 5@ 21@ 24@
14 kgs. # D.	45@ 5@ 21@ 24@
14 kgs, # D.	5@ 5@ 3@ 3@
10@ cans, #	6@ 6@ 5@ 5@
10@ cans, less than 10.	10@ 6@ 7@ 7@
 Enameled and Tinned Ware —	See <i>Ware, Hollow</i> .
 Escutcheon Pins —	See <i>Pins, Escutcheon</i> .
 Escutcheons —	Door Locks.
Door Lock.	Same dis. as Door Locks.
Brass Thread.	60@60@10@
Wood.	25@
 Expanded Metal —	List No. 5.
Lathing.	10%
Fencing, Painted Sheets.	20%
Netting, Painted Sheets.	20%
Door Mats, Galvanized.	25%
Window Guards, Panelled.	15%
Tree Guards, Panelled.	15%
 Extractors, Lemon Juice —	See <i>Squeezers, Lemon</i> .
 Fasteners, Blind —	
Mackrell's.	# doz. \$1.00. 20@20@10@
Van Sand's Screw Pat.	\$15@ gr. 60@10@
Van Sand's Old Pat.	15@ gr. 55@10@
Austin & Eddy No. 2008.	# gr. \$9.00
Security Gravity.	# gr. \$9.00
Zimmerman's.	50@10@
 Faucets —	List No. 5.
Penn's.	40%
Penn's Cork Stops.	35@
Star.	60%
Frary & Pet. Petroleum.	60%
B. & L. B. Co.	40%
West's Lock, Open and Shut Key.	50%
Star, Metal Plug, new list.	40%
Lockport, Metal Plug, reduced list.	60%
Metallic Key, Leather Lined.	60@10@20@
Cork Lined.	60@10@20@
Cork Lined.	70@5@70@10@
Burnside's Red Cedar.	50%
Burnside's Red Cedar, bbl. lots.	50@10@
John Sommers'.	
Peerless Best Block Tin Key.	40%
LXI, 1st quality, Cork Lined.	50%
Diamond Lock.	40%
Perfection Fla. Red Cedar (in boxes)	40%
Boss Metallic Key.	50%
Reliable Cork Lined.	60%
O. K. Western Pattern Cork Lined.	50%
No Brand, Red Cedar (in bbls.).	50@10@
Western Pattern Metal Key.	40%
No Brand Metal Key.	60%
Self Measuring Enterprise.	20@
Enterprise.	\$86.00. 20@
Lane's # doz.	\$36.00. 25@10@
 Felloe Plates —	See <i>Plates, Felloe</i> .
 Fibre Ware —	See <i>Ware, Fibre</i> .
 Fifth Wheels —	Derby and Cincinnati. 45@5%
Brewster.	50@5@
 Files —	Domestic—
Nicholson Files, Raspbs, &c.	60@10@5@
Nicholson's Self-Feeding.	each \$1.75
Nicholson (X.F.) Files.	25%
Nicholson's Royal Files (Seconds).	75%
(extra prices on certain sizes.)	
American.	68@10@68@10@5@
G. H. & Barnett (Black Diamond).	60@10@68@10@5@
Arcade.	60@10@68@10@5@
Eagle.	60@10@68@10@70@
Other makers, best brands.	60@10@68@10@70@
Fair brands.	70@10@70@10@8@10@
Second quality.	80@8@5@
Heller's Horse Raspbs.	50@7@5@
McCaffrey's Horse Raspbs.	50@7@5@
Chelsea Horse Raspbs, Hand Cut.	50@10@
Arcade Horse Raspbs.	60@10@60@10@5@
Trojan Horse Raspbs.	60@10@60@
 Imported —	Butcher's List.
Butcher's List.	20@
Stubbs.	Stubbs' List. 25@30@
 Fixtures, Grindstone —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. \$1.50
Pat. Sewing.	Long. # doz. \$1.50
Pat. Peg.	Plain Top. # doz. 40@45@
Pat. Peg.	Leather Top. # doz. 40@45@
 Hack Saws —	See <i>Saws</i> .
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawthornes —	
See <i>Hawthornes</i> .	
 Gun Powder —	See <i>Powder</i> .
 Hack Saws —	See <i>Saws</i> .
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 Hawthornes —	
See <i>Hawthornes</i> .	
 Hawks, Awl —	
Sewing, Brass.	# gr. \$1.75
Pat. Sewing.	Short. # doz. 45@50@
Pat. Sewing.	Long. # doz. 45@50@
 H	

Brittan, Graham & Mathes, list Jan. 1890..... 60&10/10%
Plate..... 33/4&10%
Barnes Mfg. Co. 40&10/10%
Yale..... net price
Deitz Flat Key..... 30%
Romer's Night Latches..... 15%
Brooklyn Latches..... 50&10%
Warner's Burglar Proof. \$ doz. \$8.00, 50%
Elevator—
Moore's..... 381/2%

Padlocks—

List June 10, 1891..... 50&2%
Norwich Lock Mfg. Co., old list..... 50&2%
Yale Lock Mfg. Co.'s..... net prices
Eagle..... 40%
Eureka, Eagle Lock Co. 40&2%
Romer's Nos. 0 to 91..... 30%
Romer's Scandinavian, &c., Nos. 100 to 150..... 15%
A. E. Deltz..... 40%
Champlain Padlocks..... 30%
Hotchkiss..... 60%
Bar..... 60%
Horseshoe..... \$ doz. \$9.50&50&10%
Barnes Mfg. Co. 40&10/10%
Nock's..... 90&40%
Scandinavian, ... 90&40%
E. T. Franklin's Keystone Scandinavian, Nos. 100, 120, 130 and 140..... 90&10%
Other Nos. 65%
Ames Sword Co. up to No. 160..... 40%
Ames Sword Co. above No. 160..... 50%
Slaymaker, Barry & Co., No. 1010 line..... 90&5%
41 line..... 50&5%
61 line..... 60&5%
21 line..... 75&10%
Sash, &c.—

Clark's No. 1, \$10; No. 2, \$8 \$ gr. 331/4%
Ferguson's..... 331/4%
Victor..... 60&10/10%
Walker's..... 10%
Attwell Mfg. Co. 25&331/4%
Reading..... 60&10/10%&60&10/10%
Hammond's Window Springs. 40%
Common Sense, Jap'd, Cop'd and Br'd. \$ gr. \$4.00
Common Sense, Nickel Plated. \$ gr. \$10.00
Universal..... 30%
Kempshall's Gravity..... 60%
Kempshall's Model. 60&80&10%
Corbin's Ditch, list Feb. 15, 1888..... 70%
Payson's Perfect. 60&10/10%
Hugunin's Sash Balances. 25&52%
Hugunin's New Sash Locks. 25&52%
Fent Patent. 60&10/10%&60&10/10%
Fish (Liesche's) pat., No. 100, \$ gr. \$5;
No. 105, \$ gr. \$10. 50%
Davis, Bronze, Barnes Mfg. Co. 60%
Champion Safety, list January, 1893, 70&10%
Security..... 70%
Giant, list Jan., 1892..... 70&10%
Wolcott's. 60&10/10%
Monarch..... 50%
Lumber Tools—
See Tools, Lumber.

Lustro—

Four-ounce bottles. \$ doz. \$1.75; \$ gross. \$17.00

Machines.

Boring—

Without Augers. Upright, Angular.
Douglas..... \$5.50 \$6.75. 50%
Smith, Rice's Pat. 5.50 6.75&10&10%
Jennings..... 5.50 6.75.45&10%
Other Machines. 2.35 2.75. 50%
Phillips Patent with Auger. 7.00 7.50. 25%
Miller's Falls. 7.50. 50%

Fluting—

Knox, 41/4-inch Rolls. 33.25 each } 35%
Knox, 6-inch Rolls. 33.60 each } 35%
Eagle, 91/4-inch Rolls. 32.15. 35%
Eagle, 61/4-inch Rolls. 32.85. 35%
Crown, 41/4 in., \$3.50, 6 in., \$4.00, 8 in. 35%
Crown Jewel, 6 in. 35%
American, 5 in., \$3.00, 6 in., \$3.40; 7 in., \$4.50 each. 35%
Domestic Fluter. 1.50 each, \$1.50
Geneva Hand Fluter, White Metal. 35%
Crown Hand Fluter, Nos. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25. 30%
Shepard Hand Fluter, No. 86, per doz. 15.50. 40%
Shepard Hand Fluter, No. 110, \$ doz. 11.00. 40%
Shepard Hand Fluter No. 95, \$ doz. 8.00. 40%
Combined Fluter and Sad Iron. 15.00. 40%
Holsting—
Moore's Hand Holst, with Lock Brake. 20%
Moore's Anti-Friction Differential Pulley Block. 20%
Moore's Rope Differential Pulley Block. 60%
Energy Mfg. Co.'s. 25%
See also Blocks.

Washing—

Anthony Wayne, \$ doz. No. 1, \$42; No. 2, \$36; No. 3, \$42. 40%
Wayne American. \$ doz. \$36.00
Western Star. \$ doz. No. 2, \$36; No. 3, \$39.
Weissel. \$ doz. \$54.00
Fair, and Square. \$ doz. \$42.00

Mallets—

Hickory. 20&10/20&10&10%
Lignumvitae. 20&10/20&10&10%
E. & L. Block Co., Hickory & L. V. 30&30&10%

Mattocks—Regular list. 60&10/60&10&5%

Measures—

Standard Fibreware, No. 1, peck. \$ doz. \$5.50; 1/2-peck, \$3.00

Meat Cutters—

See Cutters, Meat.

Menders, Harness—

Per doz. \$2.00

Milk Cans—See Cans, Milk.

Mills—

Coffee—

Box and Side, List, Jan. 1, 1888. \$60&60&10%
Net prices are often made, which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893. 20%

The Swift, Lane Bros. 30%

Waddell's New Box Mills, Ideal

Brand, New List. 60%

Elevator—

Moore's. 381/2%

Padlocks—

List June 10, 1891. 50&2%

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Walker's. 10%
Attwell Mfg. Co. 25&331/4%
Reading. 60&10/10%&60&10/10%
Hammond's Window Springs. 40%
Common Sense, Jap'd, Cop'd and Br'd. \$ gr. \$4.00
Common Sense, Nickel Plated. \$ gr. \$10.00

Universal. 30%
Kempshall's Gravity. 60%
Kempshall's Model. 60&80&10%
Corbin's Ditch, list Feb. 15, 1888. 70%
Payson's Perfect. 60&10/10%
Hugunin's Sash Balances. 25&52%
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Davis, Bronze, Barnes Mfg. Co. 60%
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Giant, list Jan., 1892. 70&10%
Wolcott's. 60&10/10%
Monarch. 50%

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles. \$ doz. \$1.75; \$ gross. \$17.00

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Fent Patent. 6

Pullers, Nail-

Serration.	10 doz.	\$18.00	38¢/doz.
Ortis Hammer.	10 doz.	\$6.00	
Giant, No. 1.	10 doz.	\$18.00	10¢
Giant, No. 2.	10 doz.	\$15.00	10¢
Pelican.	10 doz.	\$9.00	25¢
Eclipse.	Each.	\$2.00	net
Economy.	10 doz.	\$6.00	

Pulleys-

Hot House Awning, &c.	66¢/doz.
Japanned Screw.	60¢/doz.
Brass Screw.	70¢
Japanned Side.	60¢/doz.
Moore's Side, Anti-Friction.	50¢
Moore's Ceiling or End, Anti-Friction.	40¢
Moore's Dumb Waiter, Anti-Friction.	50¢
Moore's Electric Light.	93¢/doz.
Japanned Clothes Line.	60¢/doz.
Hay York Solid Eye.	4.00
Hay York, "Anti-Friction," 5 in. solid.	50¢/doz.
Hay York, "F" Common and Patent Burred.	20¢
Hay York, Tarbox Pat. Iron.	20¢
Hay York, Reed's Self-Lubricating.	60¢
Hay York, Moore's Anti-Friction 5 in. Wheel.	40¢
Star.	12.00
Shade Rack.	45¢
Tackie Blocks—See Blocks.	
Shepard's Niagara, No. 25.	50¢/doz.
Bash (Auger Mortise).	
Common Sense.	60¢
Empire.	60¢
Ideal, Nos. 2, 4, 10 & 15.	{ 30¢ less 1¢/doz.
Acme.	{ doz. net.
On bbl. lots extra 5¢.	
Ideal, Nos. 25 and 55.	50¢/doz. 22¢ net.

Pumps-

Cistern, Best Makers.	.60	60¢/doz.
Pitcher Spout, Best Makers.	.75	70¢/doz.

Punches-

Saddler's or Drive, good.	50¢/doz.
Bemis & Call Co.'s Cast Steel Drive.	50¢/doz.
Bemis & Call Co.'s Springfield Socket.	65¢
Spring, good quality.	50¢/doz.
Spring, Leach's Pat.	15¢
Bemis & Call Co.'s Spring.	50¢/doz.
Bemis & Call Co.'s Check.	55¢
Solid Timers', F. & W. Co.	50¢/doz.
Tinners' Hollow Punches, F. & W. Co.	55¢
Rice Hand Punches.	15¢
Avery's Revolving.	40¢
Avery's Sawset and Punch—See Sawset.	
Niagara Hollow Punches.	20¢/doz.
Niagara Solid Punches.	50¢

Rail-

Sliding Door, Wr't Brass.	50¢/lb.	35¢/lb.
Sliding Door, Bronzed Wr't Iron.	50¢/lb.	75¢/lb.
Sliding Door, Iron, Painted.	50¢/lb.	45¢/lb.
Barn Door, Light. In.	50¢/lb.	45¢/lb.
Per 100 feet.	\$2.00	2.50
B. D. for N. E. Hangers—		
Small, Med. Large.		
Per 100 feet.	\$3.15	2.70
2.30	Net	
Terry's Steel Rail.	50¢/lb.	45¢/lb.
Victor Track Rail, 7¢/lb. foot.	50¢/doz.	55¢/doz.
Carrier, double braced, Steel Rail, 7¢/lb. foot.	35¢/doz.	45¢/doz.
Lundy Parlor Door, Planed Edge, 5¢/lb. ft.	50¢/doz.	55¢/doz.
Moore's Steel Rail.	25¢/doz.	10¢/lb. ft.
Moore's Steel Rail.	5¢/lb. ft.	45¢/doz.

Rakes-

Cast Steel, Association 4' ds.	.70	70¢/doz.
Cast Steel, outside g'd's.	.70	70¢/doz.
Malleable.	.70	70¢/doz.
Cast Steel, 4' ds.	.70	70¢/doz.
Gibbs' Lawn Rake.	50¢/doz.	45¢/doz.
Gibbs' Canton Lawn Rake.	50¢/doz.	45¢/doz.
Gibbs' Acme Lawn Rake.	50¢/doz.	45¢/doz.
Gibbs' Favorite Lawn Rake.	50¢/doz.	45¢/doz.
Gibbs' Crown Lawn Rake, No. 1.	50¢/doz.	45¢/doz.
Oneida Lawn Rake.	50¢/doz.	45¢/doz.
Fort Madison Prize Bow Brace and Peiries.	50¢/doz.	45¢/doz.
Fort Madison Steel Tooth Lawn Rake.	50¢/doz.	45¢/doz.

Razors-

J. R. Torrey Razor Co.	20¢
Wostenholm and Butcher.	\$10 to £1.
Jordan's AAA, new list.	Net
Jordan's Old Faithful, new list.	Net
Galvanic.	50¢/doz.
Electric Cutlery Co.	50¢/doz.
Campbell Cutlery Co.	50¢/doz.

Razor Straps—

See Straps, Razor.	
Registers—	
Moore's Japanned.	75¢
Moore's Electroplated.	75¢
Moore's Bronze Finishes.	75¢
Moore's Solid Bronze.	65¢
Moore's Stove Pipe.	35¢

Rings and Ringers—

Bull Rings—	
Top of the Hill Ringers.	50¢/doz.
Top of the Hill Rings.	50¢/doz.
Hill's Improved Rings.	50¢/doz.
Hill's Old Style Rings.	50¢/doz.
Hill's Tongs.	50¢/doz.
Hill's Rings.	50¢/doz.
Perfect Rings.	50¢/doz.
Perfect Rings.	50¢/doz.
Blair's Hog Ringers.	50¢/doz.
Blair's Hog Ringers.	50¢/doz.
Champion Rings.	50¢/doz.
Champion Rings, Double.	50¢/doz.
Brown's Rings.	50¢/doz.
Brown's Rings.	50¢/doz.
Foot.	50¢/doz.
Ship, Common.	50¢/doz.
Ship, R. I. Tool Co.	10¢

Hog—

Scale Beams—	
See Beams, Scale.	
Scissors, Fluting.	45¢
Scrapers—	
Adjustable Box Scraper (S. R. & L. Co.)	\$6.00.
Hatch, Counter, No. 171, good quality.	45¢/doz.
Hatch, Tea, No. 161.	45¢/doz.
Union Platform, Plain.	\$2.00
Union Platform, Striped.	\$2.40
Chatillon's Grocers' Trip Scales.	50¢
Chatillon's Bucka.	25¢
Chatillon's Favorite.	25¢
Family Turnpikes.	30¢/doz.
Riehle Bros. Platform.	40¢

Screen Window and Door Frames—See Frames	
Screw Drivers—	
See Drivers, Screw.	

Rivet Sets—See Sets.**Roasting and Baking Pans—See Pans, Roasting and Baking.****Rods—**

Iron, Brass.	25¢/doz.
Iron, Black Walnut.	50¢/doz.

Screws—**Bench and Hand—**

Bench, Iron.	55¢/doz.
Bench, Wood, Beech.	50¢/doz.
Bench, Wood, Hickory.	50¢/doz.
Hand, Wood.	25¢/doz.
Hand, Grand Rapids, list.	35¢

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890.	80¢/doz.
Lag, Cone Moore's Anti-Friction.	55¢
Coach and Lag, Gimlet Point, list Jan. 1, 1890.	80¢/doz.
Coach and Lag, Gimlet Point, list Jan. 1, 1890.	80¢/doz.
Hand Rail, Sargent's.	70¢/doz.

Hand Rail, Am. Screw Co.

Hand Rail, Am. Screw Co.	75¢
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Jack Screws—

Jack Screws, Miller's Falls list.	50¢/doz.
Jack Screws, P. S. & W.	35¢
Jack Screws, Sargent.	70¢
Jack Screws, Stearns.	40¢/doz.

Cork—

Humason & Beckley Mfg. Co.	40¢/doz.
Williamson's.	33¢/doz.
Detroit Cork Screw Co.	33¢/doz.

Machine—

Flat Head Iron.	65¢
Round Head Iron.	60¢
Flat Head Brass.	65¢
Round Head Brass.	65¢
Flat Head Bronze.	65¢

Wood—

List January 1, 1891.	
Flat Head Iron.	70¢
Round Head Iron.	65¢
Flat Head Brass.	65¢
Round Head Brass.	65¢

Snaps—

Miller's Falls ACJ. Tool Hds.	15¢
Nos. 1, 12, 2, \$18.	15¢
Nos. 1, 12, 2, \$18.	15¢
Henry's Combination Haft.	45¢
Stanley's Excelsior:	45¢

Awl and Tool—

Aiken's Sets, Awls and Tools.	50¢/doz.
No. 20.	60¢/doz.
Fray's Adj. Tool Hds., Nos. 1, 12, 2, \$18.	15¢
3, \$12, 4, \$3.	15¢
Miller's Falls ACJ. Tool Hds.	15¢

Awl and Tool—

Nos. 1, 12, 2, \$18.	15¢
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Henry's Combination Haft.	45¢
Stanley's Excelsior:	45¢

Nail—

No. 20.	30¢/doz.
No. 18.	25¢/doz.
No. 16.	20¢/doz.
No. 14.	15¢/doz.
No. 12.	10¢/doz.

Saw—

Stillman's Genuine.	\$5.00/45¢/doz.

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Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.)	65¢
Fitch's (Bristol)	50¢ & 10¢
Hotchkiss	10¢
Andrews	50¢
Sargent's Patent Guarded	70¢ & 10¢
German, new list	40¢ & 10¢
Covert	50¢ & 10¢ & 25¢
Covert, New Patent	50¢ & 10¢ & 25¢
Covert, New R. E.	60¢ & 10¢ & 25¢
Covered Spring	60¢ & 10¢ & 10¢
Covert's Saddlery Works' Triumph	33¢ & 5¢
John Protz Snaps	75¢ & 75¢ & 5¢
Kelley & Woolworth's Steel Harness	50¢ & 10¢ @ 60¢

Snaths	
Scythe	50¢ & 2¢ @ 50¢ & 2¢

Soldering Irons

See Irons, Soldering.

Spittoons, Cuspidors, &c.**Standard Fiberware**

Cuspidors, 8½-inch, ½ doz., No. 5, 58¢
Spittoons, Daisy, 8-inch, No. 1, 4¢; 10 and 11 inch, 8¢.

Spoke Shaves

See Shaves, Spoke.

Spoke Trimmers

See Trimmers, Spoke.

Spoons and Forks**Tinned Iron**

Basting, Cen. Stamp. Co.'s list	70¢ & 10¢
Solid Table and Tea, Cen. Stamp. Co.'s list	70¢ & 10¢
Buffalo, S. S. & Co.	39¢ & 2¢

Silver Plated

4 months or 5% cash 30 days:	
Meriden Brit. Co., Rogers	40¢ & 15¢
O. Rogers & Bros.	40¢ & 15¢
Rogers & Bros.	40¢ & 15¢
Feed & Barton	40¢ & 10¢ & 5¢
Wm. Rogers Mfg. Co.	40¢ & 15¢
Simpson, Hall, Miller & Co.	40¢ & 15¢
Holmes & Edwards Silver Co.	40¢ & 15¢
L. Boardman & Son.	50¢ & 12¢

Miscellaneous

Holmes & Edwards Silver Co.:	
No. 67 Mexican Silver.	50¢ & 10¢ & 5¢
No. 30 Silver Metal.	50¢ & 10¢ & 5¢
No. 24 German Silver.	50¢ & 10¢ & 5¢
No. 50 Nickel Silver.	50¢ & 5¢
No. 49 Nickel Silver.	50¢ & 10¢ & 5¢

Wm. Rogers Mfg. Co.:	
Rogers' Silver Metal.	50¢ & 10¢ & 6¢
185 Rogers' German Silver.	60¢ & 6¢
225 Rogers' Nickel Silver.	50¢ & 6¢
German Silver.	50¢ & 50¢ & 5¢
German Silver, Hall & Elton.	50¢ & 5¢
Nickel Silver.	50¢ & 5¢ & 50¢ & 10¢ & 5¢
Britannia.	60¢ & 6¢ & 5¢
Boardman's Nickel Silver.	list July 1, 1891
Boardman's Nickel Silver.	60¢ & 7¢ & 5¢
Boardman's Brittannia Spoons, case lots.	60¢ & 5¢

Springs**Door**

Torrey's Rod, 39 in.	2¢ doz. \$1.20 @ 1.2
Warren's No. 1, 2¢ doz. \$1.50.	No. 2, 3.40.
2.55¢ & 5.55¢ @ 5.55¢ & 10¢	

Steel (Coil), list April 19, 1888	20¢
star (Coil), list April 19, 1888	20¢

Victor (Coil), 1890	20¢
60¢ & 10¢ & 60¢ & 10¢ & 10¢	

Champion (Coil), 1890	60¢ & 10¢ & 60¢ & 10¢ & 5¢
Cowell's, No. 1, 2¢ doz. \$1.80.	No. 2, 3.15.

15.00.	50¢ & 50¢ & 10¢
Bubber complete.	2¢ doz. \$4.50.

Hercules.	50¢ & 50¢ & 10¢
Phoenix.	33¢ & 2¢

Carriage, Wagon, &c.**Elliptic, Concord, Platform and Half****Scroll**

60¢ & 10¢ & 60¢ & 10¢ & 10¢ or net prices

Cliff's Bolster Springs

25¢

Squares**Steel and Iron**

{ 80¢ & 10¢ & 10¢ & 80¢ & 25¢

Nickel-Plated

{ 80¢ & 10¢ & 10¢ & 80¢ & 25¢

Try Square and T Bevels

60¢ & 10¢ & 10¢ & 10¢

Dixson's Try Square and T Bevels

50¢

Winterbottom's Try and Miter

30¢ & 10¢

Starrett's Micrometer Caliper Squares

25¢

Avery's Flush Bevel Squares

40¢

Avery's Bevel Protractor

50¢

Squeezers**Fodder**

{ 2¢ doz. \$2.00

Blair's "Climax".

{ 2¢ doz. \$1.25

Lemon**Porcelain Lined, No. 1.**

{ 25¢ & 35¢

Wood, No. 2.

{ 30¢ & 35¢

Wood, Common.

{ 30¢ & 35¢ & 40¢ & 5¢

Dunlap's Improved.

{ 35¢ & 37.5¢ & 20¢

Sammsl. No. 1, \$5.00; No. 2, \$9.12

{ 18¢ & 20¢

Jennings' Star.

{ 20¢ & 25¢

The Boss.

{ 20¢ & 25¢

Dean's. No. 1, 2¢ doz. \$5.50; No. 2, \$3.35; No. 3, \$1.90; Queen, \$2.50

Little Giant.

{ 50¢ & 50¢ & 5¢

King.

{ 40¢ & 20¢

Hotchkiss Straight Flash.

{ 2¢ doz. \$12.00

Silver & Co., Glass.

{ 8¢ gro. \$9.00

Standard Fiber Ware**See Ware, Standard Fiber.****Staples****Barbed**

{ 17¢ & 27¢ & 37¢

Barbed Blind, ½ in. and larger.

{ 27¢ & 37¢ & 47¢

Fence Staples, Galvanized.

{ same price

Fence Staples, Plain.

{ as B'r' Wire

See Tr'd. Rep.

Grand Crossing Tack Co.'s list.

{ 75¢ & 10¢

Steelyards

{ 40¢ & 10¢ @ 50¢

Stocks and Dies**Blacksmith's**

Waterford Goods.

{ 85¢

Butterfield's Goods.

{ 85¢

Lightning Screw Plate.

{ 25¢ & 30¢

Beece's New Screw Plates.

{ 25¢ & 30¢

Reversible Ratchet.

{ 30¢

Gardiner.

{ 25¢

Green River.

{ 25¢ & 30¢

Stops, Bench

Morrill's, 2¢ doz., Nos. 1, \$9.50; 2, \$12.00

{ 40¢ & 20¢

Hotchkiss's.

{ 2¢ doz. \$5. 10¢ & 10¢ & 10¢

Weston's. No. 1 \$10. No. 2, \$9. 25¢ & 10¢ & 5¢

McGill's, 2¢ doz. \$3.

Cincinnati. 25¢ & 10¢

Terrell's No. 1 and 2, 2¢ doz. \$3; No. 3, 30¢

Stone**Stones, Grind—See Grindstones.****Scythe Stones**

Pike Mfg. Co., 1st April, 1892.

Cleveland Stone Co., list Nov. 1892.

Oil Stones, &c.

Pike Mfg. Co.

Hindostan No. 1, 2¢ doz. \$8.

Sand Stone.

Turkey Oil Stone, 4 to 8.

Whips										
American Whip Co.	Lengths.	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$	7	7 $\frac{1}{2}$	8 ft.	
X. L. Whalebone Driving.	18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00		
Mureka, Two-thirds Whalebone.	15.00	16.50	18.00	20.00	22.00	24.00	27.00	30.00		
Bull Bone, Half-length Whalebone.										
American Standard.	8.00	8.50	11.00	12.00	13.00	15.00				
True Grip, Raw Hide Center.	6.00	6.00	6.50	7.00	7.50	9.00				
New Name, Stocked Java, Black, and Wine Colors.			6.00							
Americans, 93 Pen Whip.			6.00							
Gents' Light Driving No. 111.			6.00							
Gents' Light Driving No. 106.			5.00							
Hand-made Stocked Java No. 108.			3.75	4.00						
A large variety of cheaper grades.							50¢@3\$ 00			
Team Whips.							32.00@37.50			
Toy Whips.							2.00@2.50@3.00			
Hardware Assortment, 10/American, 75 Whips for \$50.00.										

Per dozen.	Ossawan Mills, An'd and Tinned on Spools.	60&10%	Bemis & Call's:
	Ossawan Mills, Brass and Copper on Spools.	50&10%	Pat. Combination Bright
	Tate's Spooled, Tin'd & Annealed.	60&5%	Pat. Combination Black
	Tate's Spooled Cop. and Brass.	50%	Merrick's Pattern
	Cast Steel Wire.	50¢	Brigg's Pattern
	Stubs' Steel Wire.	36¢ to 2.30¢	Cylinder or Gas Pipe
	Steel Music Wire, 12 to 30, imported.	60@70¢ 7¢ lb	No. 3 Pipe
			Aiken's Pocket (Bright)
			66.00 50¢@10%
			The Favorite Pocket
			3 doz. 24.00 40¢
			Webster's Pat. Combination
			25¢
			Boardman's
			30¢
			Always Ready
			25¢
			Alligator
			50¢
			Donohoe's Engineer
			20&10%
			Eagle
			50¢@10%
			Acme, Bright
			50¢@10%
			Acme, Nickleed
			40¢@10%
			Hercules
			70@70@25¢
			Walker's
			55¢@10%
			Diamond Steel
			55¢@10%
			Cincinnati Brace Wrenches
			95@10@25¢
			Taft's Vise Wrench
			55@10@25¢

Wire and Wire Goods—

Iron—

Market,			
Br. & Ann., Nos. 0 to 18.	75@10@75@10@5%	Extra 5@10%	
Cop'd, Nos. 0 to 18.	75@5@70@10%	often given and net prices often made on large lots.	
Galv., Nos. 0 to 18.	70@5@70@10%		
Tin'd, Tin'd list, Nos. 0 to 18.	70@70@10%		

Stone,		
Br. and Ann'd, Nos. 16		
to 18.	80%	
Bright and Ann'd, Nos. 19 to 26.	80@5%	Extra 10% often given.
Br. and Ann'd, Nos. 27 to 36.	82@4@5%	
Tinned.	65@10%	
Galvanized Broom Wire, 18 to 21.	75@10@15@	
Brass, list Jan. 18, 1892.	40@5@	
Copper, list Jan. 18, 1892.	40@5@	
Annealed Wire on Spools.	60@5@	
Malin's An'al'd & Tin'd on Spools.	60@5@	
Malin's Brass and Cop. on Spools.	50@5@	

Wire Cloth and Netting—

Painted Screen Cloth @ 100 ft. \$1.75@32.00

Galvanized Wire Netting, .75@75@10%

Wire Barb—

See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable

Baxter's Adjustable "S"

Baxter's Diagonal

Coes' Genuine

Coes' "Mechanics"

Girard Standard

Lamson & Sessions' Engineers

P. S. & W. Agricultural

Girard Agricultural

Lamson & Sessions' Agric'l

W. & B. Diamond

Wringers, Clothes—

Am. Wringer Co.'s list Jan. 2, 1892. 2¢ cash

Colby Wringer Co.'s list Sept. 1, 1892. 2¢ cash

Lovel Mfg. Co., list Jan. 1, 1892. 2¢ cash

Peerless Mfg. Co., list Feb., 1892. 2¢ cash

National Wringer & Mfg. Co., list June 1, 1892. 2¢ cash

Wrought Goods—

Staples, Hooks, &c., list March 17, 1892

85@10@85@15@

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw, per gal.	50		
Linseed, City, boiled.	53		
Linseed, Western, raw.	50		
Lard, City, Extra Winter.	75	76	
Lard, City, Prime.	75	75	
Lard, City, Extra No. 1.	65	65	
Lard, City, No. 1.	55	55	
Lard, Western, prime.	75	75	
Cotton-seed, Crude, prime.	40		
Cotton-seed, Crude, off grades.	35	38	
Cotton-seed, Summer Yellow, prime.	45	46	
Cotton-seed, Summer Yellow, off grades.	42	44	
Sperm, Crude.	85	90	
Sperm, Natural Spring.	1.00	1.05	
Sperm, Natural Winter.	1.00	1.05	
Sperm, Bleached Winter.	1.05	1.08	
Whale, Crude.			
Whale, Natural Winter.	55	56	
Whale, Bleached Winter.	58	58	
Whale, Extra Bleached.	59	60	
Sea Elephant, Bleached Winter.			
Menhaden, Crude, Sound.	40	40	
Menhaden, Crude, Southern.	42	42	
Menhaden, Light Pressed.	45	45	
Menhaden, Bleached Water.	45	45	
Menhaden, Extra Bleached.	48	48	
Tallow, City, prime.	60	65	
Tallow, Western, prime.	60	60	
Cocoonut, Ceylon.	6	6	
Cocoonut, Cochin.	34	34	
Cod, Domestic.	38	40	
Cod, Foreign.	42	45	
Red Elaine.	44	46	
Red Saponified.	54	54	
Banks, per gal.	40	41	
Straits.	41	42	
Olive, Italian, bbls.	58	60	
Neatfoot, prime.	75	80	
Palm, prime, Lagos.	75	84	

Paints and Colors—

Barytes, Foreign, 100 lb. ton.	\$22.00	24.00
Barytes, Amer. floated.	29.00	32.00
Barytes, Amer. No. 1.	16.00	18.00
Barytes, Amer. No. 2.	13.00	15.00
Barytes, Amer. No. 3.	11.00	12.00
Blue, Celestial.	100 lb.	12
Blue, Chinese.	40	50
Blue, Prussian.	25	40
Blue, Ultramarine.	8	25
Brown, Spanish.	14	1
Brown, Vandyke, Amer.	3	34
Brown, Vandyke, English.	6	8
Brown, Vandyke, in boxes or barrels.	2.85	8
Carmine, No. 40, in ounce bottles.	3.75	2.50
Chalk, in bulk.	8¢ ton.	2.40
Chalk, in bbls.	100 lb.	33
China Clay, English.	13.00	18.00
Cobalt Oxide, prep'd.	9.00	11.00
Cobalt Oxide, black.	lots 100 lb.	1.90
Cobalt Oxide, black.	less 100 lb.	1.98
Green, Paris, in bulk.	10	10
Green, Paris, 170 lb. 175 lb. kegs.	10	11
Green, Paris, small pack.	12	17
Green, Chrome, ordinary.	6	6
Green, Chrome, pure.	22	25
Lead, Eng. B. & white.	84	10
Lead, Amer. White, dry, in oil.	84	10
Kegs, lots less than 500 lb.	7	74
Kegs, lots 500 lb. to 5 tons.	6	6
Kegs, lots 5 tons to 12 tons.	6	6
Kegs, lots 12 tons and over.	6	6
Lead, White, in oil, 25 lb. tins.	6	6
Lead, White, add to keg price.	6	6
Lead, White, in oil, 125 lb. tins.	6	6
Lead, Red, bbls. and 1/2 bbls.	6	6
Lead, Red, kegs.	64	72
Litharge, kegs.	64	72
Litharge, bbls. and 1/2 bbls.	6	7

TERMS, &c.—Lead and Litharge.—On lots of 500 lb. or over, 60 days' time or 2½% discount for cash if paid within 15 days of date of invoice.		
Ocher, Rochelle.	1.35	1.14
Ocher, French Washed.	1.14	2.14
Ocher, German Washed.	1.14	3
Ocher, American.	1.14	1.14
Orange Mineral, English.	84	9
Orange Mineral, French.	10	10
Orange Mineral, German.	84	9
Orange Mineral, American.	84	84
Paris White, English Cliff stone.	1.00	1.15
Paris White, American.	65	75
Red, Indian, English.	55	7
Red, Indian, American.	2	6
Red, Turkey.	9	14
Red, Tuscan.	9	11
Red, Venetian, American.	1.10	1.10
Red, Venetian, English.	1.20	1.35
Talc, French.	1.14	1.14
Talc, American.	1.14	1.14
Terra Alba, Fr. ch.	100 lb.	95
Terra Alba, English.	70	80
Terra Alba, American No. 1.	65	75
Terra Alba, American No. 2.	45	50
Umber, Turkey, Burnt and Powdered.	1.14	1.14
Umber, Drop, Frankfort.	25	30
Umber, Drop, English.	12	15
Umber, Drop, Domestic.	7	10
Umber, Lampblack, Best.	20	25
Umber, Lampblack, Common.	7	10
Umber, Ivory.	8	15
Blue, Chinese.	88	95
Blue, Prussian.	20	25
Brown, Vandyke.	7	12
Green, Chrome.	8	13
Green, Paris.	16	18
Sienna, Raw.	7	12
Sienna, Burnt.	7	14
Umber, Raw.	7	10
Umber, Burnt.	7	10
Putty—		
In barrels and 1/2 bbls.	0.0136	0.014
In tubs.	0.0136	0.014
In tin cans.	0.0136	0.014
In bladders.	0.0136	0.014
Spirits Turpentine—		
In regular bbls.	284	29
In machine bbls.	29	29
Glue—		
Low Grade.	8	10
Cabinet.	12	14
Medicinal White.	13	15
Vermilion, Trieste.	90	92
Vermilion, Chinese.	92	95
Whiting Common.	3716	424
Whiting Gilders'.	45	55

ALL OTHER COUNTRIES.	
Per Annum, Postpaid.	
Weekly Edition: \$5.00 = £1.25 francs = 20 marks = 11 florins = 20 roubles (coin) = 25 lire = 20 pesetas.	
Semi-Monthly Edition: \$2.50 = 10 = 12½ francs = 10 marks = 6 florins = 3 roubles (coin) = 12½ lire = 10 pesetas	
Monthly Edition: \$1.25 = 5 = 6½ francs = 5 marks = 3 florins = 1½ roubles (coin) = 6½ lire = 5 pesetas.	
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